



The Rhythmic Structure of English Verse

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Paul Kiparsky

The Rhythmic Structure of English Verse

0. Introduction*

The prototypical iambic pentameter has ten syllables, alternatingly unstressed and stressed:

(1) Thě líōn dýīng thrústěth fórth hís páw (R3 5.1.29)¹

But such lines are relatively rare even in the strictest neoclassical verse. Lines commonly deviate from this basic pattern in stress placement and in the number of syllables:

(2) Thěre āre / móre thíngs / īn Heávěn / ānd eárvth, / Hörátiō
Thǎn āre / dréamt öf / īn yōur / phílō/sóphý (Ham. 1.5.165–166)

Still, not any arbitrary deviation from the basic pattern produces a metrically acceptable iambic pentameter. Even some deviations that are ostensibly small compared to those in (2) suffice to wreck a line completely. To see this, we need only glance at the verse of Wyatt, Surrey, and other early Tudor poets who experimented with other principles of versification than those that came to prevail, as in this sonnet by Wyatt:

(3) The longe love, that in my thought doeth harbar
And in myn hert doeth kepe his residence
Into my face preseth with bold pretence,
And therin campeth, spreding his baner.
She that me lerneth to love and suffre
And will that my trust, and lustes negligence
Be rayned by reason, shame, and reverence
With his hardines taketh displeasure.
Wherewithall, vnto the hertes forrest he fleith,

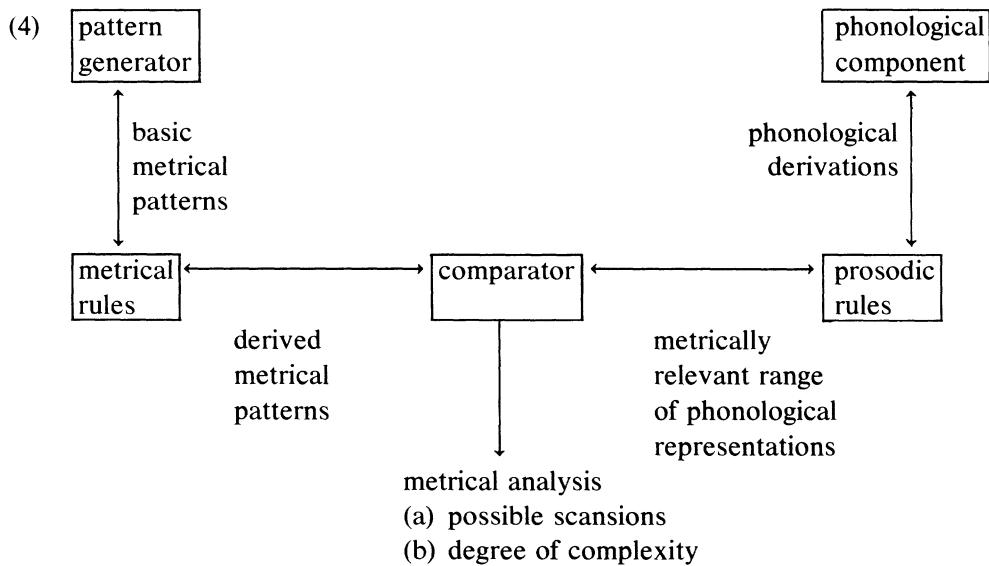
* This work was supported in part by a grant from the National Institute of Mental Health, MH13390–09, while the author was at the Massachusetts Institute of Technology (Cambridge, Massachusetts, USA). Thanks to Alan Prince for several good suggestions.

¹ Text after G. B. Harrison's edition. Wyatt and Donne are cited in the original spelling and punctuation (editions of Muir and Thomson and of Grierson).

Leving his entreprise with Payne and cry
 And there him hideth and not appereth.
 What may I do when my maister fereth,
 But, in the felde, with him to lyve and dye?
 For goode is the liff, ending faithfully.

Therefore, an account of English meter must show both how it is that the lines in (2) are metrical and how it is that many lines in (3) are unmetrical with respect to later usage in iambic pentameter verse.

In Kiparsky (1975) (henceforth SSM), I attempted to explicate such facts in the general framework of a theory described schematically in (4):



I assumed that meters are characterized by basic metrical patterns—themselves in turn generated by some combinatorial processes that are perhaps simple in English, but complex and interesting in other traditions, e.g. in classical Arabic (Maling (1973)). A set of metrical rules then specifies how the basic metrical patterns may be manifested in the metrically relevant linguistic representation of metrical lines of verse. *What* the metrically relevant representations of the language are is not a trivial problem; the task of characterizing them falls on the prosodic rules, which I conceive of as a kind of parphonology that modifies the phonological derivations of the language and produces as output one or (more commonly) several alternative representations that may differ from phonetic representations in being derived from the underlying representations by fewer rules (as in French) or by more rules (as in English).

This article will provide new support for this general framework, and give it more substance by delineating the formal properties of its components in greater detail. The main purpose of the article is to demonstrate that the system of metrical rules is

radically simplified, if we represent stress in the tree notation devised by Liberman (1975), rather than with the conventional numbers; in addition, a number of new findings that remain intractable in the SSM framework fall directly into place. In the course of doing so, we will also be able to fill in two gaps in the argument that SSM gave for the sort of theory represented in (4). First, it is now quite clear that the metrical rules must constitute a system of *unordered* (simultaneous) conditions on the correspondence between basic metrical patterns and linguistic representations, exactly as in the otherwise fairly different theory of Halle and Keyser (1971). Second, the distinction between metrical rules and prosodic rules, which was assumed but not explicitly justified in SSM, is necessary in any version of the theory, and the two sets of rules show clear-cut formal and functional differences.

I begin in section 1 by rapidly retracing part of the ground covered in SSM, showing how the new approach works. The rest of the article is devoted to exploring and testing its new and often surprising consequences. Once again I take the versification of Shakespeare as a basis, while bringing in Milton, Pope, and the Tudor poets for comparison as representatives of three other, divergent systems. Aside from the practical advantages of working with well-studied and well-indexed material, the choice of Shakespeare is motivated by his central status in English poetry and the sheer volume of his writings. The importance of this last factor is immense. A highly articulated theory necessarily leads to detailed predictions about what ought and what ought not to occur in the texts. As will become evident below, these predictions occasionally involve so specific and rare combinations of circumstances that with a smaller corpus it might no longer be possible to distinguish confidently accidental from systematic nonoccurrence. As a great linguist and author of a classic essay on English metrics put it, "life consists of little things, the important matter is to see them largely" (Jespersen (1933)).

1. Revision of the Metrical Rules

The distribution of words in a line is regulated by principles that refer to stress, word boundaries, and phrase boundaries. We refer to odd positions in iambic verse as W(weak) and even positions as S(strong) (and conversely for trochees). The interplay of stress and word boundaries works as follows:

- (i) Compounds of two monosyllabic words, e.g. *stormclouds*, *tongue-tied*, occur in both WS and SW position; of these, SW is strongly favored.
- (ii) Phrases of two monosyllabic words, e.g. *time's fool*, *dark days*, occur in both WS and SW position; of these, WS is favored.
- (iii) Polysyllabic (including disyllabic) words must have their strongest stress in S position. E.g. *dark morning*, *divine eye* can only occur in WSW position. This

holds also for each constituent of a compound word. Hence *beforehand*,

$$\begin{array}{ccccccc} & & & & & 0 & 1 \\ & & 3 & 0 & & & 3 \\ \textit{love-lacking} & & & & & & \end{array}$$
 can only occur in WSW position.

It follows that identically stressed sequences of syllables differ metrically if their word structure is different. A compound like *tongue-tied* and a word like *contact* have the same stress pattern, but only the former is permitted in WS position. *Love-lacking* and *contacting* have the same stress pattern, but *love-lacking* must be WSW, while *contacting* must be SWS. *The forehand* and *beforehand* have the same stress pattern, but the former can occur in either SWS or WSW position (5a,b), while the latter is restricted to WSW (5c):

(5) a. Had the / *forehand* / and vant/age of / a king (H5 4.1.280)

$$\begin{array}{ccccccc} w & s & w & s & w & s & w & s \\ w & s & w & s & w & s & w & s \end{array}$$

b. The sin/ew and / *the fore/hand* of / our host (Tro. 1.3.143)

$$\begin{array}{ccccccc} w & s & w & s & w & s & w & s \\ & & & & & & & \end{array}$$

c. Since it / hath been / *before/hand* with / our griefs (Jn. 5.6.11)

$$\begin{array}{ccccccc} w & s & w & s & w & s & w & s \\ & & & & & & & \end{array}$$

In SSM, I represented stress in the customary numerical notation, with 1,2,3, . . . standing for primary, secondary, and successively weaker stresses in the domain under consideration. Since finer gradations among weak stresses appeared to play no metrical role, I equated stress of degree 4 and all weaker stresses with absence of stress, which gives a system with four degrees of stress. The basic metrical pattern, then, was 4 1 4 1 4 1 4 1 4 1 for iambic pentameter, with certain conditions (varying from period to period) on the syntactic division between lines. The relationship between this basic pattern and actual verse instances was specified by the following metrical rules (MR):

MR 1 [1 stress]

$$\begin{array}{c} \uparrow \\ [\alpha \text{ stress}] \end{array}$$

A primary stress in the basic pattern (i.e. a strong position) can correspond to any stress in the actual verse.

MR 2a [4 stress]

$$\begin{array}{c} \uparrow \\ \# [\alpha \text{ stress}] \# \end{array}$$

An unstressed (Weak) syllable in the basic pattern can correspond to any stress in the actual verse if it is in a monosyllabic word.

These metrical rules account for the difference observed between monosyllabic and polysyllabic words. In particular, the facts given in (1)–(4) above are taken care of.

There is one problem, however: syllables with subsidiary stress in words like *maintain*, ¹₃ *conflict* are blocked by MR1–2 from appearing in weak position. Yet they occur freely there (otherwise such words, absurdly, would not be usable in poetry at all):

(6) a. I will / *maintain* / it with / some lit/tle cost (R3 1.2.259)
 b. To note / the fight/ing *conflict* of / her hue (Ven. 345)
 c. And I / will *com/ment* up/on that / offense (Son. 89)

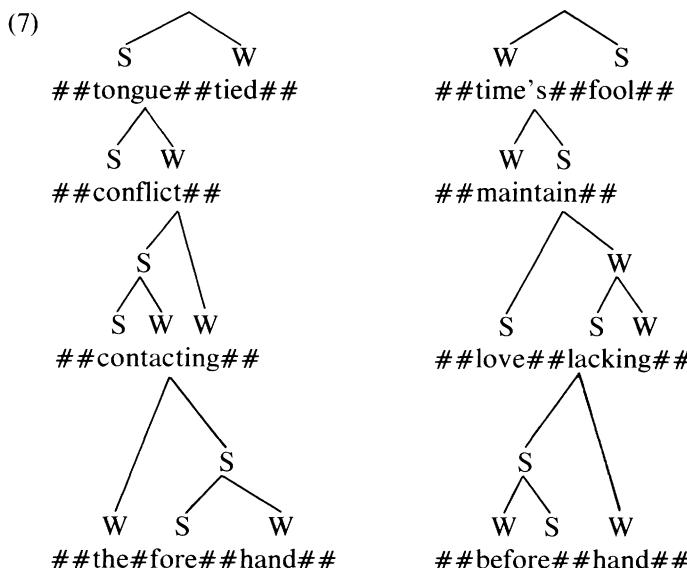
In order to allow for this metrical positioning, I proposed the following prosodic rule:

Prosodic Rule (PR)

Disregard all but the strongest stress in each domain $\#\#X\#\#$, where X does not contain $\#\#$.

PR has no effect on the previous cases, so that both stresses in $\#\#before\#\#hand\#\#$ and $\#\#love\#\#lacking\#\#$ still count, but it now correctly permits $\#\#maintain\#\#$, ¹₃ $\#\#conflict\#\#$ to be treated metrically as 4 1 and 1 4.

On the basis of a study of English stress and intonation, Liberman (1975) has proposed to do away with numbers and to adopt instead a notation where stress patterns are represented as *trees*, where each nonterminal node immediately dominates an S (for Strong) and W (for Weak) and no other form of branching occurs. Each syllable corresponds to a terminal node and each linguistic constituent corresponds to a node. Primary stress is then located on the syllable with an S that is dominated only by Ss all the way up the tree. Cf. the following examples:

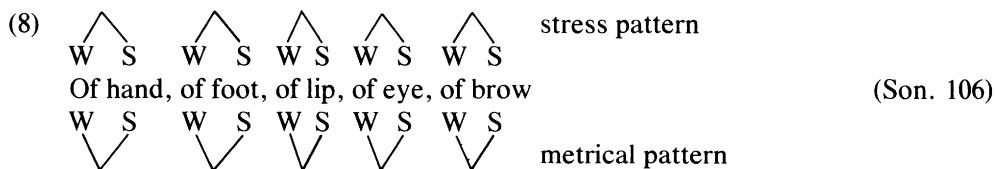


1 3 1 0 3 1 0 1

In order to distinguish *comment* from *comet*, and *maintain* and *contain*, Liberman retains a binary segmental feature [\pm stress]. The words in each pair have the same suprasegmental stress pattern, SW and WS respectively, but the W syllables are marked as [+stress] where they have a subsidiary stress. In Shakespeare's versification, only the suprasegmental stress pattern is of relevance and the feature [\pm stress] appears to play no role at all.

Built into the very notation are two of the most important special characteristics of stress: first, its *relative* nature—the fact that the degree of a stress is not absolute but exists by virtue of the greater or lesser stresses next to it—“syntagmatically” (rather than by virtue of the greater or lesser stresses that might have occurred instead of it—“paradigmatically”); and second, its *hierarchical* nature—the fact that stress comes in complex patterns of gradation that mirror syntactic constituent structure.

We now reformulate the metrical rules on the basis of this new representation of stress. The basic metrical pattern for the iambic pentameter can be set up as $\hat{W} \hat{S} \hat{W} \hat{S} \hat{W} \hat{S} \hat{W} \hat{S}$. The metrical analysis of a line, i.e. the determination of its metricality and of its metrical complexity, is effected by a matching of the two tree patterns, representing its linguistic stress and poetic meter, respectively. In the simplest case, the two trees are entirely congruent. We have, for example, a perfect match in the following line:



Of course, normally the linguistic stress pattern has more structure than is the case in this line. We can assume that at least each phrase is represented by a rooted tree that matches its syntactic constituent structure, with nodes labeled W and S if they are left and right daughters, respectively. These higher levels of structure, too, have metrical relevance, as I will show later; for the moment they can be disregarded since we are so far considering lines simply as concatenations of feet.

Most lines, moreover, have *mismatches* between the two tree patterns. The problem of metrics is to distinguish those mismatches that are *impermissible* (i.e. make a line unmetrical) from those that are *permissible*, and to characterize the complexity of a metrical line in terms of the mismatches in it.

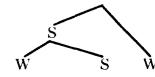
We first introduce the concept of a *lexical stress*.

Definition

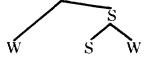
In a stress pattern $\hat{M} \hat{N}$, M and N are *lexical* if they are not separated by any #.

For example, *dog* and *take* have no lexical stress, since their S (e.g. in

w s s w
the #dog and take #it) is necessarily separated from its correlative W by a #. This will be the case always in monosyllables, and only in them, since stress trees are congruent



with the constituent structure—that is, we cannot have **the # rabbit*, for example,



but must make it *the # rabbit*.

The conditions for metricality can then be formulated provisionally as follows:

(9) A line L is *metrical* with respect to the meter M if and only if the stress pattern of L corresponds to M as follows:

- Terminal nodes correspond one-to-one.
- There is no correspondence of the form $s \downarrow w$, where S is a lexical stress.

\downarrow
w

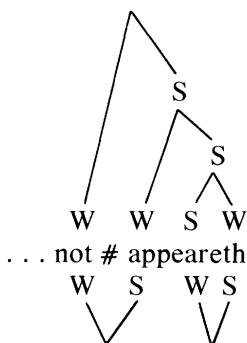
Mismatches violating (9a) or (9b) are impermissible, others are permissible. A simple characterization of metrical complexity is now possible:

(10) The complexity of a line is measured by the number of mismatches in it.

It is quite likely that we will want to elaborate on (10) by weighting different kinds of mismatches in different ways, but for now (10) will do.

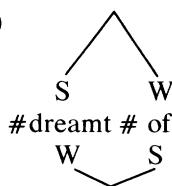
For example, the matching in the line from (3)

(11)



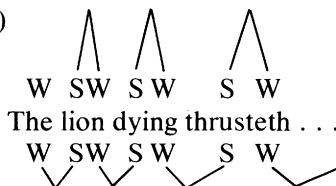
is an impermissible mismatch, since the lexical S of the penultimate syllable corresponds to a metrical W. Since no other way of matching the stress and metrical patterns conforms to (9), the line is unmetrical in Shakespeare's system. In (12) we have a permissible mismatch, for the S of the stress pattern that occurs in metrical W position is not lexical:

(12) (cf. (2))



In addition to such *labeling* mismatches, on this theory there are also *bracketing* mismatches:

(13) (cf. (1))



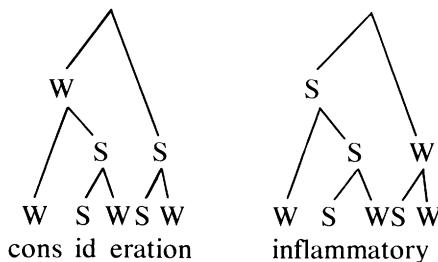
We shall see that bracketing mismatches contribute in important ways to metrical complexity, and there are moreover cases where determination of metricality must take bracketing into account.

2. Subsidiary Stresses in Words

Consider now how the two theories deal with the metrical role of nonprimary stresses. First of all, recall that SSM needed a prosodic rule PR to allow the 3 stress in $\begin{smallmatrix} 3 & 1 & 1 & 3 \end{smallmatrix}$ in *maintain*, *comment*, etc. to be disregarded, so it could occur in weak position in spite of MR 2. But since the stress pattern of such words is now represented simply as $\begin{smallmatrix} w & s \\ & s \\ & w \end{smallmatrix}$ *maintain* and *comment*, PR is no longer needed.

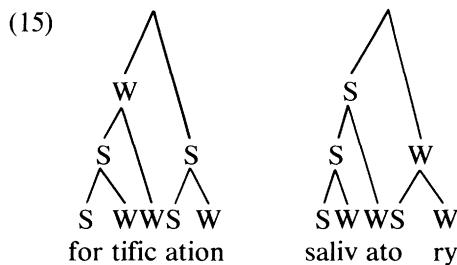
In fact, a stronger argument can be made. PR not only can but must be eliminated, since it makes incorrect predictions in a set of cases that were not noticed in SSM. On the new theory, secondary stresses that are not adjacent to the main stress correspond to terminal S nodes. The case with secondary stress two syllables to the left or right of the main stress is illustrated by words like *consideration*, *inflammatory*:

(14)



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With secondary stress three syllables away, we have e.g. *fortification, salutary*.²



Given this notation, rule (9) implies that these secondary stresses, unlike those of *comment* and *Maintain*, ought to occur only in strong positions in verse, whereas on the old theory MR 2a failed to so restrict them because of PR.

With the new theory, we predict that words like *consideration* ought to be preceded by an odd number of syllables, and words like *fortification* ought to be preceded by an even number of syllables, with resolution of the second and third into a single metrical position (which is possible in these cases, by the prosodic rules that we investigate in section 10 below). That is, the possible scensions will be as follows:

	W	S	W	S	W
(16) a. (i)	con	sid	er	at	ion
(ii)		for	tific	at	ion
b. (i)	in	flam	mat	or	y
(ii)		sal	ivat	or	y

And this is just what happens in Shakespeare. For words like *consideration*, compare:

(17) a. Albeit / *consid/erat/ions* in/infinite (1H4 5.1.102)

w s w s w

b. With such / *accom/modat/ion* and / besort (Oth. 1.3.238)

w s w s w

c. That the / *precip/it at/ion* might / down stretch (Cor. 3.2.4)

w s w s w s

d. *Parti/cular/ities/* and pet/ty sounds (2H6 5.2.2.4)

Contrast the treatment of words like *fortification*:

² For secondary stresses to the right of the main stress, this is the case only when an unstressed syllable follows on the right. Final secondary word stresses are simply Ws (with the phonetic feature [+stress]), e.g.



forify. Some evidence that this, too, is correct will be presented below.

S W S W
 (18) a. This *for/tificat/ion*, gen/tlemen, shall / we see it? (Oth. 3.2.5)
 S W S W
 b. And are / upon / the *me/diterranean* float (Tmp. 1.2.234)

The evidence is, then, that words like *consideration* cannot resolve a syllable, whereas words like *fortification* must do so. Since there are no segmental factors involved here, the reason must be that words like *consideration* can be positioned in iambic verse only if resolution does not take place, whereas words like *fortification* can be positioned in iambic verse only if resolution does take place. But this is precisely what is predicted by the new theory.

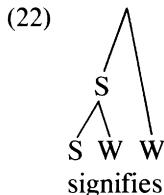
For the case of rightward secondary stress, compare (19) with (20), where the same contrast is observed, again as predicted.

(19) a. Who in / unnec/essar/y act/ion swarm (H5 4.2.27)
 b. As amp/ly and / unnec/essar/ily (Tmp. 2.1.264)
 (20) a. Will serve / our long / intérrog/ator/ies. See, (Cym. 5.5.392)
 b. And charge / us there / upon / intérrog/atories (M.V. 5.1.298)
 c. Let it / be so. / The first / intérrog/atory (M.V. 5.1.300)

I see no way of repairing PR and/or MR 2a to account for Shakespeare's metrical treatment of secondary stress. It will not do to just limit PR so that it eliminates from consideration only those secondary stresses that are adjacent to the main stress, as in *maintain* and *comment*. While that would correctly preserve the metrical significance of the secondary stresses in words like *fortification*, *consideration*, *unnecessary*, and *interrogatory*, it would wrongly do the same with the final secondary stresses of words like *signifies*—and these are free to occur in weak position:

(21) a. Signi/fies that / from you / great Rome / shall suck (J.C. 2.2.87)
 b. Monta/gue, Mon>tague, / for Lan/caster. (3H6 5.1.67)
 c. Absol/ute Mil/an. Me, / poor man, / my library (Tmp. 1.2.109)
 d. Absol/ute Queen. / MEC. This in / the pub/llic eye? (Ant. 3.6.11)

On the other hand, the possibility of (21) is again predicted by the revised theory, for the stress trees of the words in question have the form (22):



The first syllable is of course a lexical S but corresponds here legitimately to a metrical W because of its phrase-initial position; cf. section 5 below for discussion. It goes without saying that the more common metrical positioning of *signifies* and similar words is SWS, because of the stress on the initial syllable. The point is that when the special conditions permitting the initial S in metrical W position are met, the third syllable is free to be in W position also: metrically, there is no difference between $\begin{smallmatrix} 1 & 0 & 3 \\ & 1 & 0 & 0 \end{smallmatrix}$ *signifies* and *Winchester*, e.g.

(23) *Winches/ter* goose, / I cry, / A rope! / A rope! (1H6 1.3.53)

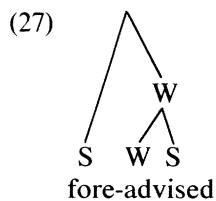
As a last line of defense for the SSM treatment of secondary stress, we might try to elaborate PR further as follows:

(24) A secondary stress is metrically disregarded if it is next to a primary stress not separated from it by #, or if it is word-final.

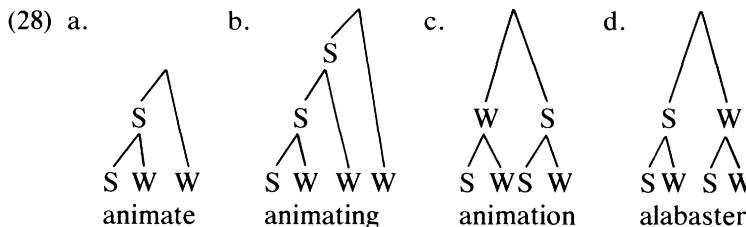
But this will not do either. It permits compounds of the type *fore-advised* to occur in WSW position, where they are in fact not found. Though *fore-advised* and *signifies* have the same stress pattern, in the numerical notation, they are metrically quite different, for the former can only occur in SWS position:

(25) As you / were *fore-/advised*, / had touched / his spirit (Cor. 2.3.191)
 (26) **Fore-advised* that / from you / great Rome / shall suck

From (26) we see that WSW placement would be unmetrical (contrast the lines in (21)), as predicted correctly by the stress representation assigned to it in the new theory, where the last syllable is a lexical S (contrast (22)):



Rules (9) and (24) differ in the other direction as well. There are two possible treatments of stress-neutral suffixes, such as *-ing* and *-er*. Liberman (1975) proposes that they have the special property of not affecting the bracketing of the words to which they are added. The word stress rule that assigns W to a right node if it does not branch, and S if it does, will then correctly differentiate e.g. *animating* (28b) from *animation* (28c), giving the former the same bracketing and therefore the same initial stress as *animate* (28a).



The other possibility is to allow rebracketing even with stress-neutral suffixes, and to take their special property as being instead that a node dominating them is treated like a nonbranching node for purposes of stress assignment. Then *animating* would be bracketed in the same way as *animation*, but its third and fourth syllables together behave like the single third syllable of *animate*, giving initial stress. This second solution is necessary anyway for *-y* and *-er* in words like *testimony*, *antiquary*, and *alabaster* (28d). The two solutions have different consequences for metrics. On the first solution a difference is predicted between (28b) and (28d): words like *animating* should be admissible in WSWS position phrase-initially, but words like *alabaster* should not, since the third syllable in them is an S. On the second solution both classes of words should behave exactly alike: neither should be permitted in WSWS position. As for the facts: first of all, what both solutions agree in predicting is indeed true. There are absolutely no lines like (29):

(29) *Ala/baster / will not / outlast / this rhyme

In the crucial case, where they make divergent predictions, the evidence is unfortunately not clear. The examples of apparent WSWS placement of words like (28a) are fairly dubious:

(30) a. Author/izing / thy tres/pass with / compare (Son. 35)
 b. Signify/ing / nothing. (Mac. 5.5.28)

In (30a) there are reasons to believe that the stress was on the second syllable, and in (30b) *signifying* might be trisyllabic (by virtue of PR 1 in section 11 below) or the line could even be scanned as headless (cf. section 9 below). Whether the absence of convincing cases of the type (30) is significant enough from a statistical point of view to argue for the second alternative is a question that I will have to leave open here.

In any case, whatever the final judgment turns out to be on the stress-neutral suffixes, the contrast between (22) and (27) further illustrates (cf. the earlier example (7)) how superficially identical stress patterns are differentiated in the Liberman notation in a way that point by point corresponds to distinctions in versification; though this time the system of SSM provides no way of dealing with the distinction.

In tracking down the implications of the new theory we have quickly found some deep-seated regularities in a domain that is so insignificant from a practical point of view that previous metrical studies have, as far as I know, ignored it completely. It is

no less important for that as evidence bearing on the theoretical issue at hand. On the contrary, since such minutiae are unlikely to have ever been the subject of much reflection by even the most technique-conscious of poets, any system that we discover in them is that much more sure to reflect not some self-imposed learned or artificial convention but the very nature of rhythm and language.

In what follows, the provisional formulation of the metrical rules will be generalized and sharpened, and it will be shown that systematic differences between the metrics of Shakespeare and other major English poets correspond to simple modifications of rule (9). The exposition will focus in turn on the three principal aspects of matching. First, sections 3–6 investigate the nature of permissible labeling mismatches, showing how they interact with bracketing. The analysis is extended to nonlexical Ss and to the phrase-initial case, and it is shown that all three can be subsumed under a single general formulation. Sections 7–8 then deal with further aspects of metrical bracketing. Finally, sections 9–11 provide a treatment of mismatches—real and apparent—in the number of syllables. It is shown that they reveal the distinction between metrical and prosodic rules with particular clarity.

3. Lexical Stress and Bracketing

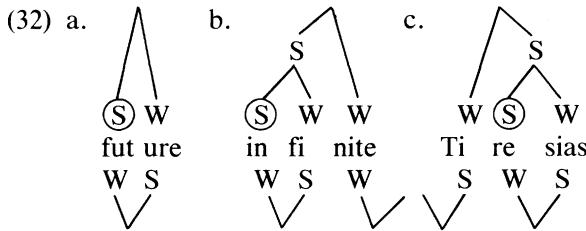
We have seen that in Shakespeare, an essential condition on metricality has to do with labeling: word stresses must fall in metrical S position. This is a pervasive feature of English verse, whose formulation we have now been able to extend to secondary stress. There are, however, aspects of English metrics that depend crucially on bracketing, interacting with labeling in an interesting way.

It is well known that Milton allows occasional inversion of lexical stresses, as in the following lines from *Paradise Lost* and *Paradise Regained*:

(31) a. Beyond / all past / example and / future	(10.840)
b. Through the infinite host, nor less for that	(5.874)
c. And <i>Tiresias</i> and Phineus prophets old	(3.36)
d. To the <i>Garden</i> of Bliss, thy seat prepar'd	(8.299)
e. In the <i>visions</i> of God. It was a hill	(11.377)
f. Created thee, in the <i>image</i> of God	(7.527)
g. By the <i>waters</i> of Life, where'er they sat	(11.79)
h. <i>Universal</i> reproach, far worse to bear	(6.34)
i. But to <i>vanquish</i> by wisdom hellish wiles	(PR 1.175)
j. In their <i>triple</i> degrees, regions to which	(5.750)
k. To their night-watches in <i>warlike</i> Parade	(4.780)
l. Burned after them to the <i>bottomless</i> pit	(6.866)

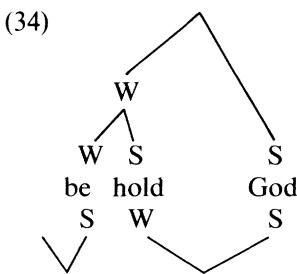
In all cases, a lexical S occurs in metrical W position. The remarkable fact is that, with some doubtful exceptions, *such a labeling mismatch never occurs together with a*

bracketing mismatch. That is, we have



where the offending lexical S (circled in (32)) always corresponds to a lexical W in the same metrical foot.³ Cases like (33), with simultaneous bracketing and labeling mismatches, occasionally encountered in Donne, simply do not occur in Milton with a matching of the form (34):

(33) a. Shall *behold* God, and never tast deaths woe (Holy sonnets, 7)
 b. If faithfull soules be *alike* glorifi'd (Holy sonnets, 8)
 c. Weake *enough*, now into our world to come (La corona, 3)
 d. In vaine this sea shall *enlarge*, or enrough (Progresse of the soule, 52)
 e. A better Sun rose *before* thee to day (Resurrection, imperfect)
 f. All *demands*, fees, and duties, gamesters, anon (Satyre 5, 39)



In this respect Milton is by no means isolated in the English metrical tradition. The overwhelming majority of lexical labeling mismatches in Wyatt preserve bracketing intact, as in Milton:

(35) a. There is *written* her faier neck rounde abowte (VII)
 b. Ffyre that *purgith* allthing that is vnclene (LXXVI)
 c. So sore *alterd* thi sellff how mayst thou se? (LXXV)
 d. That nowe are wyld and do not remembre (XXXVII)
 e. Thanched be *fortune*, it hath ben othrewise (ibid.)
 f. And I have leve to goo of her *goodeness* (ibid.)
 g. And no *marvaill*, when sight is so opprest (CVI, 1.72)

³ This bears out Magnuson and Ryder's claim (1971) that SW positioning is more highly constrained than WS positioning.

- h. Make playn thyn hert that it be not *knotted* (ibid., 1.92)
- i. To frete *inward* for losing such a losse (ibid., 1.112)
- j. Off highe *Cesar*, and dam Cato to dye (CV)
- k. Call him *Alessaundre*, and say that Pan (ibid.)
- l. Zele of *justice* and chaunge in tyme and place (ibid.)

The inversions in lines 4, 5, 8, 9, 11, and 12 of (3) can now be seen to be of the same type, cf. (11). Indeed, the constraint is near-categorical in Wyatt too; though compare (36):

(36) And he that sufferth *offence* without blame (CV, 1.70)

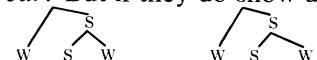
More recently, Gerard Manley Hopkins's iambic poetry, which was heavily influenced by Milton's, cultivated the same metrical construction with characteristic extravagance:

(37) a. The world is charged with the *grandeur* of God
 b. *Generations* have trod, have trod, have trod (God's grandeur)
 c. By that *window* what task what fingers ply
 d. In a *neighbour* deft-handed are you that liar (The candle indoors)
 e. Among *strangers*. Father and mother dear (To seem the stranger)
 f. With rash-fresh *rewinded* newskeined score
 g. And pelt *music*, till none's to spill nor spend (The sea and the skylark)
 h. Tom; then Tom's fallowboot*fellow* piles pick (Tom's garland)
 i. With the *sweetest* air that said, still plied and pressed
 j. Beauty's *bearing* or muse of mounting vein (The handsome heart)
 k. I *remember* a house where all were good
 l. Will, or mild nights the new *morsels* of spring (In the valley of the Elwy)

This regularity gives an independent test for deciding between the two competing treatments of stress-neutral suffixes considered above (section 2). If words like *appeareth*, *dividing*, and *recorded* are kept out of SWS position in Wyatt, Milton, and Hopkins, this would speak in favor of the first solution, where stress-neutral suffixes



preserve the bracketing of the base, viz. *appeareth* like *appear*. But if they do show up

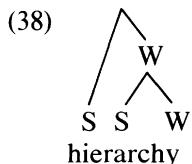


in SWS position, we must instead assume rebracketing, i.e. *appeareth* like *remember*. Such a case is line 11 of (3), cf. (11). This line of argument and that of section 2, then, should converge on the same conclusion if the theory is consistent with the facts. That is, matchings like (11) should be normal in poets like Wyatt, Milton, and Hopkins if and only if genuine cases of the type (30) are absent in poets like Shakespeare. Furthermore, if both things are the case, we would expect to find internal linguistic evidence in favor of rebracketing with stress-neutral suffixes; if neither is the case, we would

expect to find internal linguistic evidence that the bracketing of the base is retained. The logic of the argument is quite clear, though I do not have the data that must be plugged into it, either on the metrical or the linguistic side.

The constraint that marks this important parallel tradition in English versification looks rather mysterious in the SSM framework (and indeed in previous theories too). Now it has a straightforward interpretation in terms of the two independently given basic matching operations, viz. matching of labeling and matching of bracketing. The basic idea is that no lexical S can be involved in a labeling and bracketing mismatch *at the same time*. A lexical S in W position must therefore be a left branch of the lexical tree, as the W is the left branch of the metrical tree that makes up the foot. This is illuminating in that it shows the expected relationship between complexity and unmetricality: of the theoretically possible mismatches of lexical labeling, only the simplest possible case, that which preserves bracketing intact, is permitted.

1 3 0
Words like *hierarchy* have two adjacent lexical Ss,⁴ both left branches.



As far as I know, the first S in such words always shows up in S position in the poets in question, cf. for Milton (*Paradise Lost*):

- (39) a. Each in / his *hier/archy*, / the or/ders bright (1.737)
- b. Of *hier/archies*, / of or/ders, and / degrees (5.591)
- c. Who speed/ily / through all / the *hier/archies* (5.692)
- d. So sang / the *hier/archies*: / meanwhile / the son (7.192)

Since the type is not all that common, we cannot be totally certain that the other positioning is to be excluded.

As we will state it here, the constraint that governs the positioning of lexical stress in Wyatt and Milton amounts to a more limited version of (9b):

(40) There is no matching of the form



where

- (i) W, S are lexical, and
- (ii) There is a node N that dominates W and immediately dominates S.

⁴ It follows that words of the *hierarchy* type are unmetrical on either positioning in Shakespeare. They do not, I believe, occur in his verse.

The structural relation between S and W in (40) will recur so often that it will be convenient to refer to it by a special term, *command* (compare the well-known relation between nodes in syntactic trees that goes under the same name).

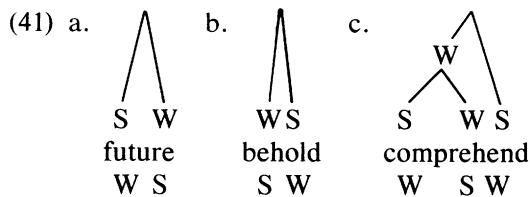
Definition

P *commands* Q if and only if there is a node R that dominates Q and immediately dominates P.

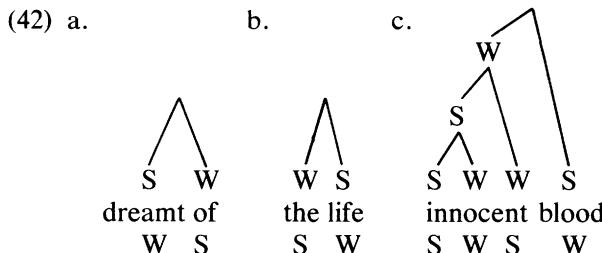
For example, (40ii) is equivalent to saying that S commands W.

4. Nonlexical Stress and Bracketing

We have seen that poets who permit lexical S in W position generally do so only when there is no concomitant bracketing mismatch, of the type defined in (40). That brings up the question: does a corresponding restriction hold also on the placement of *nonlexical* S in W position—that is, on matchings of the form defined by (40), *without* condition (i), or with a weaker version of it? For example, just as there are poets who permit matchings like (41a) and exclude matchings like (41b,c)



are there also poets who permit matchings like (42a) and exclude matchings like (42b,c)?



The answer is yes. Matchings like (42b,c) are in fact avoided by nearly all English poets.

I begin with the most flagrant cases, those schematized in (42b,c). (42b) comes from the last line of (3):

(43) For good / is the / life end/ing faith/fully

It sounds even farther from the iambic pentameter norm than most of the other aberrant lines of (3), which are explicable as mismatches of lexical S in W position.

That will not help us with the last line, though, nor will anything else we have so far built into our system.

If there is something wrong with its meter, it cannot at any rate be simply the numerical stress pattern, for other lines with similar sequences of stressed and unstressed syllables do not necessarily sound bad, as for example:

(44) And no/thing 'gainst / Time's scythe / can make / defense (Son. 12)

Nor can it of course be just the feminine caesura, which is completely normal in English verse:

(45) Is this / a dag/ger // that / I see / before me (Mac. 2.1.33)

It is rather the interplay of both these factors, stress and syntax, which we must look at to understand what is going on here. In rebuilding the English iambic pentameter, Wyatt and his contemporaries had not yet hit on a principle that most later poets, no doubt quite unconsciously, were to stick to in one or another form. To my knowledge, Buss (1974) was the first to point out that a line "with an unstressed syllable just to the left of the prominently stressed phrase-terminal syllable in P5 [the fifth position of the line/P.K.], seems not to be allowed by Milton." More generally, this configuration is felt as deviant at any odd (weak) position.

We define a *#-level stress*, entirely parallel to the term *lexical stress* introduced earlier.

Definition

In a stress pattern $\widehat{M\ N}$, M and N are *#-level stresses* if they are separated by one #.

The counterpart of (40) for *#-level stresses* is (46):

(46) There is no matching of the form

$$\begin{array}{c} W \quad S \\ \downarrow \\ W \end{array}$$

where

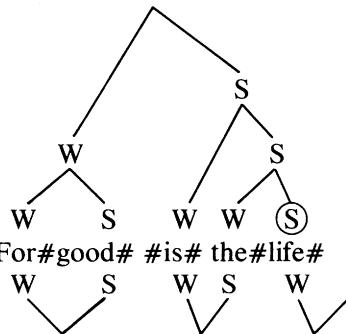
- (i) W is *#-level*, and
- (ii) S commands W

A further condition must be added for this case:

- (iii) S is not dominated by W

This ensures that the S is not subordinated to a still stronger stress. In (43), then, the matching is as in (47), where the circled S violates (46).

(47)



Condition (46) is observed by most English poets, including Shakespeare. In Wyatt and Surrey, however, lines with cadences that violate it are found with some frequency:

(48) a. *Command/ed I / reave, // and / thy spirit / unloose*
 b. *Follow / thee, // and / all blithe / obey / thy call*
 c. *Rather / than to / be, // out/wardly / to seem* (Surrey)
 d. *And she / me caught / in her / armes // long / and small*
 e. *With in/nocent / blode // to /fede my/sellff ffat* (Wyatt)

Donne's satires have plenty of examples of the same cadence:

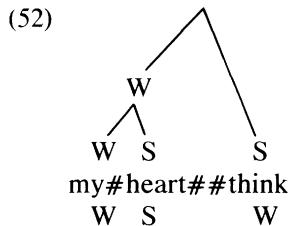
(49) a. *Shall I / leave // all / this cons/tant com/pany*
 b. *Sooner / may one / guesse, // who / shall bear / away*
 c. *Whither, / why, when, / or with / whom // thou / wouldest go* (Satyre I)

But Milton has only rare exceptions to (46), such as (50):

(50) *On him / who had / stole // Jove's / authen/tic fire* (P.L. 719)

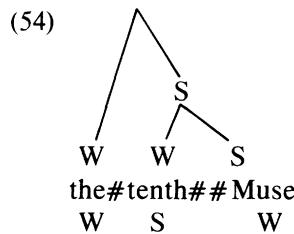
In Shakespeare, this cadence is very rarely encountered, and the huge corpus leaves no doubt that its avoidance is systematic. It is interesting to see how sharply (46) delimits the shunned configuration from superficially similar but innocuous ones. For example, there is nothing wrong with strong feminine caesuras per se, i.e. with a matching $\overset{s}{\downarrow}$ before phrase boundary. No violation of (46) is involved as long as the preceding syllable is not a #-level W. For example, it may be an S (and be #-level) to some preceding W (viz. (52)):

(51) a. *Why should / my heart / think // that / a se/veral plot* (Son. 137)
 b. *Grief fills / the room / up // of / my ab/sent child* (JN 3.4.93)



Or it may be not #-level (and be a W) (viz. (54)):

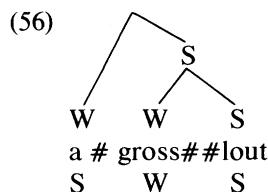
(53) a. Be thou / the *tenth* / *Muse*, // ten / times more / in worth (Son. 38)
 b. But, like / a *sad* / *slave*, // stay / and think / of naught (Son. 57)
 c. Resemb/ling *strong* / *youth* // in / his mid/dle age (Son. 7)
 d. And see / the *brave* / *day* // sunk / in hi/deous night (Son. 12)
 e. And do / not *drop* / in // for / an af/terloss (Son. 90)
 f. Better / becomes / the *grey* / *cheeks* // of / the east (Son. 132)



In (51)–(54) we have in each case a labeling mismatch with the kind of S specified in (46iii), but since the S is not preceded by a W of the kind specified in (46i), there is no metrical violation.

Sequences of this type can also be safely put in SWS position. Compare (53)–(54) with (55)–(56):

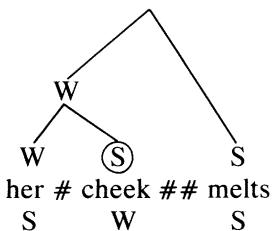
(55) a. Pronounce / thee *a* / *gross lout*, / a mind/less slave (W.T. 1.2.301)
 b. Omit/ting *the* / *sweet be/nefit* / of time (2G.V. 2.4.65)
 c. And no/thing 'gainst / *Time's scythe* / can make / defense (Son. 12)
 d. Nor shall / *Death brag* / thou wand/erest in / his shade (Son. 18)



Here there is neither a mismatched S nor a bracketing mismatch. And compare (51)–(52) with (57)–(58):

(57) a. Which *her / cheek melts*, / as scor/ning it / should pass (V.A. 982)
 b. I un/derstand / thy kiss/es and / thou mine (1H4 3.1.205)
 c. If I / lose thee, / my loss / is my / love's gain (Son. 42)
 d. O it / came o'er / my ear / like the / sweet sound (T.N. 1.1.6)
 e. Hang there like fruit, my soul,
 Till the / tree die! (Cym. 5.5.264)

(58)

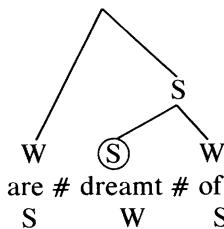


Here conditions (i) and (ii) on (46) are both met, but not condition (iii). In this type of matching, the parallelism of (46) and (40) does not hold, so that the extra condition (iii) is required for the #‐level case.

Finally, in cases like (59), we do have the type of labeling mismatch that (46) singles out, but this time there is not the bracketing mismatch specified in (46ii), so that this pattern is metrical too, while skirting another edge of unmetricality:

(59) Than *are / dreamt of / in your / philo/sophy* (Ham. 1.5.116)

(60)



This analysis is built on an assumption that must be made explicit here: that the maximal domains of bracketing are bounded by clause boundaries, or by major phrase boundaries, roughly those that are traditionally identified as *caesuras*. For example, I take it that (43) is bracketed into two intonationally separate *cola*, so that the first colon (47) in its entirety is not dominated by *W*, i.e. not subordinated to the second. This is why it falls under (46iii) and is properly excluded as unmetrical. On the other hand, the mismatched *Ss* in (55c,d) and (57), though phrase-final, are not caesural, so that they are at a higher level *Ws* to constituents on their right, which makes the lines metrical. Just which boundaries are to be considered caesural is in many cases a difficult question; cf. section 8 below and Dillon (1977).

Quite a few puzzles (minor ones, I hope) remain in this area. A characteristic example is the line (61):

(61) Let me / not to / the marr/iage of / true minds

(Son. 116)

If we suppose that *not* is stressed, and ends a colon, the line is a counterexample to (46). But neither assumption is necessary. There could well be subordination to the phrase *to the marriage*, with a caesura after the seventh position. And besides, if we accept the stress pattern given by Abrams et al. (1962, 1677): *Lét mě nót . . .*, the line conforms to (46) regardless of the extent of bracketing.

In Pope and Milton, not only lines like (43), (48), and (49), but also characteristic Shakespearean lines like (53) are practically absent, as also noticed by Buss (1974). The appropriate rule is a generalization of (46), obtained simply by dropping condition (i) altogether:

(62) There is no matching of the form

$$\begin{array}{cc} W & S \\ \uparrow & \\ W & \end{array}$$

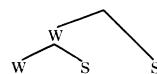
where

- (i) (omitted)
- (ii) S commands W
- (iii) S is not dominated by W.

The need for retaining condition (iii) is shown by lines like (63), which are parallel to (57).

(63) a. Weigh *the Men's wits* against the Lady's hair (R.L. 5.72)
 b. While *the Fops envy*, and the ladies stare (R.L. 4.104)

Of course, the preceding W must still be understood as a terminal node (a point that needed no separate mention as (40) and (46) were formulated). There is nothing wrong with a preceding *phrasal* W as long as it ends in a terminal S:



(64) a. His French / is pure; / *his Voice* / too - you / shall hear (Epistle II,2,7)
 b. And the / *pale ghosts* / start // at / the flash / of day (ibid. 5.52)
 c. On the / *rich quilt* / sinks // with / beco/ming woe (R.L. 4.35)

Some apparent counterexamples are eliminated by taking into account contrastive stress

(65) A Swiss, a *High Dutch*, or a Low Dutch Bear (Ep. I,1.64)

and similarly E.M. 3.124 (with the context 3.121 ff.)

In the late eighteenth century, the more relaxed versification defined by (46) was revived, and then taken even further by some of the Romantic poets. Shelley

especially, likes to experiment with meter, and in some of his lines he even violates (40):

- (66) a. And beasts hear *the sea* moan in inland caves (Prom. 1.1.581)
- b. I see *cars* drawn by rainbow-winged steeds (Prom. 2.3.130)
- c. Till *it sink*, dizzy, blind, lost, shelterless (Prom. 1.1.42)

It is Browning who then uses this regained freedom for new effects. Much has been said about the speech-like rhythm of his dramatic monologues, but its metrical source has not been precisely characterized. The free placement of caesuras and the overall metrical complexity are only part of the story. I submit that violations of (46) are at least equally important:

- (67) a. With wonder *at lines*, colors and what not?
- b. Clench *my teeth*, suck my lips in tight, and paint (243)
- c. What *will hap some day*. We've a youngster here (273)
- d. Much more the figures *of man*, woman, child (289)
- e. Back *I shrink*—what is this I see and hear (365)
- f. Though he's none *of you!* Could Saint John there draw (374)
- g. Lies *to God*, lies to man, every way lies (The Ring and the Book 4.216)

Another virtuoso of conversational style was Robert Frost, whose use of the cadence has much in common with Browning's. Just how important a role it plays in his narrative poems will be evident from the following passages in *Birches*:

- (68) a. One *by one* he subdued his father's trees
By riding *them down* over and over again
Until he took the stiffness out of them,
And *not one* but hung limp, not one was left
For him to conquer. *He learned* all there was
To learn about not launching out too soon (28–33)
- b. It's when I'm weary of considerations
 And life is *too much* like a pathless wood
 Where *your face* burns and tickles with the cobwebs
 Broken across it, and one eye is weeping
 From *a twig's* having lashed across it open (43–47)

5. General Conditions on Matching of S

The placement of Ss in W position is controlled by the left context in still another way. Where Milton puts a lexical S in W position (setting aside the phrase-initial case for the moment) the syllable to the left is practically always either a proclitic (cf. (31), e.g. *By the waters of Life . . . , . . . to the bottomless pit*, *But to vanquish by wisdom . . .*), or

belongs to the same word (e.g. *And Tiresias . . . , Universal reproach . . .*). The limitation has been noticed before (Buss (1974, 3), who cites an also unpublished 1951 dissertation of Weismiller). It is only a tendency in Wyatt (cf. the contrary cases (35c,d,i)) and Hopkins (cf. (37f,g,h,l)), and even in Milton there is at least one exceptional line:

(69) Which of us who beholds the *bright surface* (P.L. 6.472)

We already know that nothing like (31), (35), and (37), let alone (69), is ever possible in Shakespeare. But the curious restriction we have just seen holds for inverted feet with #-level Ss as well, which do sometimes occur in Shakespeare, as in (57c), (59), and these additional cases:

(70) a. <i>Only shape thou thy silence to my wit</i>	(T.N. 1.2.61)
b. <i>If I dream not, thou art Emilia</i>	(C.E. 5.1.346)
c. <i>If it prove so, I will be gone the sooner</i>	(C.E. 1.2.13)
d. <i>Thou dost love her because thou knowst I love her</i>	(Son. 42)
e. <i>They may vex us with shot or with assault</i>	(1H6 1.4.13)
f. <i>Whoe'er keeps me, let my heart be his guard</i>	(Son. 133)
g. <i>She may help you to many fair preferments</i>	(R3 1.3.95)
i. <i>Or how haps it I seek not to advance</i>	(1H6 3.1.31)
j. <i>For how do I hold thee but by thy granting</i>	(Son. 87)

There is also a strong tendency to restrict compounds in WS position in the same way, though this is not categorical.

There are, in effect, certain limits on putting Ss in W position when they are commanded by a node on their left. Again we have large-scale but systematic differences between poets on the scope of the restriction. Rather than going through the relevant trees case by case, in order not to miss the forest I map it out in Table 1, where the metrical “dialects” of Wyatt, Milton, Shakespeare, and Pope are indicated by boundaries separating the types of positioning they avoid (left or below) from those they use.

Table 1 graphically shows the increasing limitations on “inverted feet” from the Tudor to the Augustan period. The absence in Shakespeare of lines like (31), (35), and (37), with lexical S in W position (i.e. the exclusion of the configurations in the left column of Table 1), is now seen to be a generalization of a kindred restriction inherent in Milton’s verse (bottom left of Table 1), and, in turn, to be the precursor of even severer constraints in the latter half of the 17th century. They involve the prohibition of not only lexical but also #-level Ss from metrical W phrase-internally. Lines like (55) and (71), with matchings like (12), never occur in Pope, for example. I do not know of any English verse where the constraint is strictly extended to Ss of still higher syntactic rank, viz. ##-level Ss. Even Pope, about as closefisted metrically as any English poet

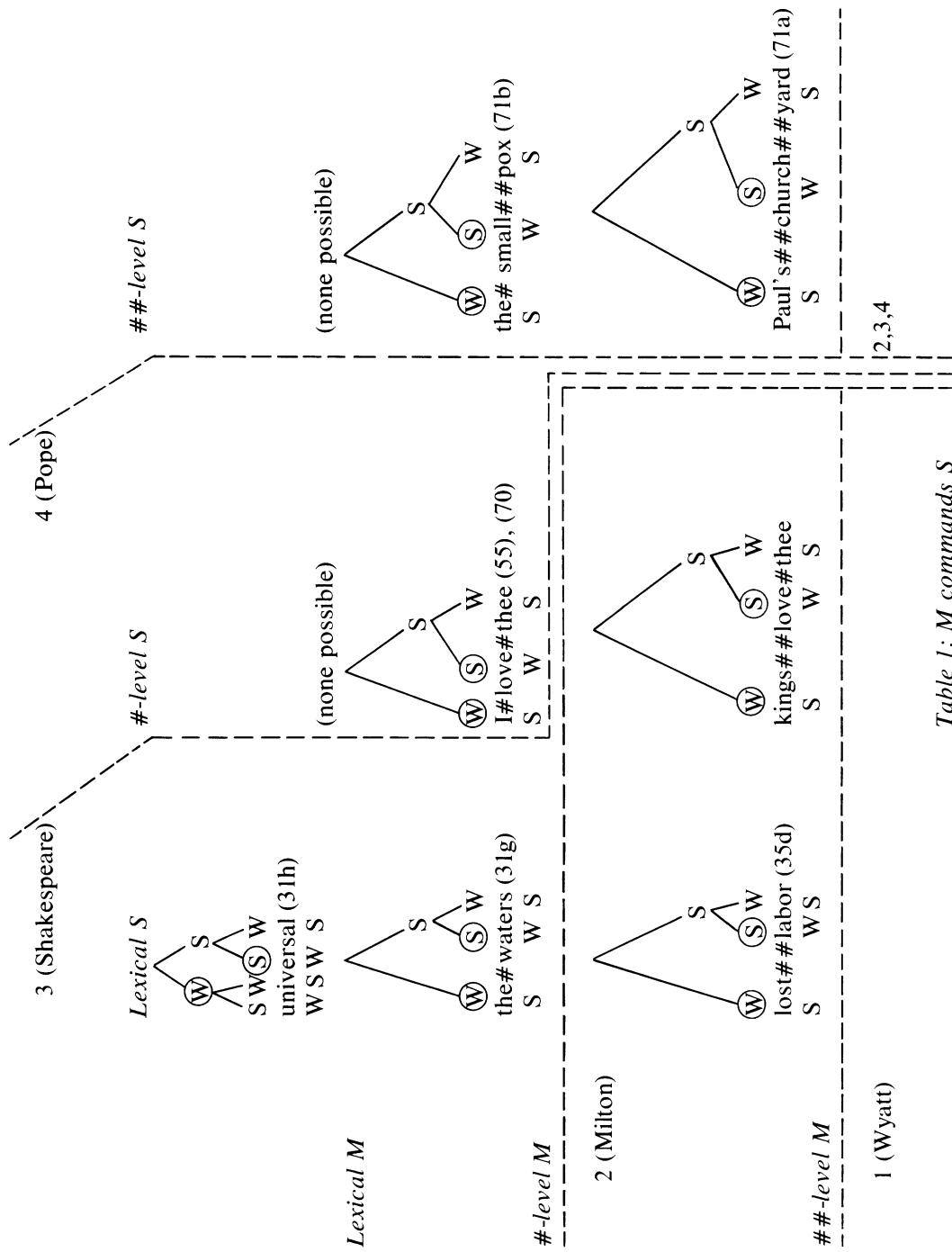


Table 1: M commands S

has ever been, occasionally let the main S of compounds into W position:

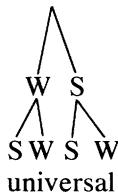
(71) a. Nor is Paul's church more safe than Paul's *churchyard* (E.C. 3.623)
 b. Charmed the *smallpox*, or chased old age away (R.L. 5.20)
 c. Some, deep *Freemasons*, join the silent race (Dunciad 4.571)

(For more examples of both types, see SSM, p. 604.)

There is a good reason why such matchings should remain permissible. Otherwise trisyllabic compounds as in (71c) could not be used in iambic verse at all, unless the restrictions on *lexical* Ss were simultaneously weakened somehow to allow the other possible positioning, at SWS—a much grosser loosening of the meter that would defeat the purpose of the whole move.

There are important differences between the restrictions charted in Table 1 and those discussed earlier. First, it is immaterial whether the node M on the left that commands the S is a W or an S. In Table 1, all examples have been chosen with M = W for uniformity. A quite parallel table could be constructed where in each case M = S. For example, in the case of lexical S (left column of Table 1) we could just as well replace (top to bottom) (72a) by (72b)—as witness the absence of lines like (29)—(72c) by (72d) (with contrastive stress on *these*), and (72e) by (72f).

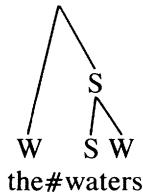
(72) a.



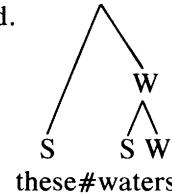
b.



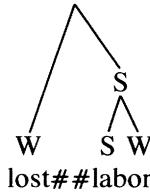
c.



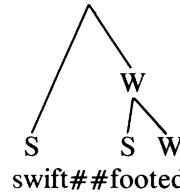
d.



e.



f.



The “dialect boundaries” of Table 1 remain just as valid for these cases too. Second, it makes no difference whether the preceding M is terminal or nonterminal. The decisive factor is only its level on the stress hierarchy.

We now put together the facts of Table 1 with those discussed in sections 3 and 4, which are summarized in Table 2 on p. 216 (excluded patterns to the left of the lines and above them).

The rules that follow hold for the four metrical styles mapped out in Tables 1 and 2. They are intended to account for everything we have covered so far, that is, for the conditions on metricality that involve labeling mismatches.

(73) *Metrical Rule, Part b (final version; supersedes (9b))*

There is no matching of the form

$$\begin{array}{cc} M & S \\ \uparrow & \\ W & \end{array}$$

where

System 1: Wyatt

(= 40) S commands M, and S, M are lexical S, W respectively (Table 2).

System 2: Milton

- (i) M commands S, M is $\#\#$ -level and S is lexical or $\#$ -level (Table 1);
- (ii) (= 40, 62) S commands M, and M is a lexical W, or M is a terminal W and S is not dominated by a W (Table 2).

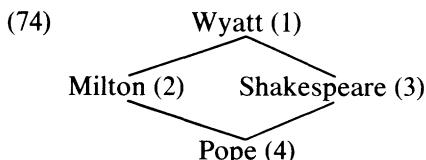
System 3: Shakespeare

- (i) M commands S, and (a) M is $\#\#$ -level and S is lexical or $\#$ -level, or (b) S is lexical (Table 1);
- (ii) (= 40, 46) S commands M, and M is a lexical W, or M is a $\#$ -level W and S is not dominated by a W (Table 2).

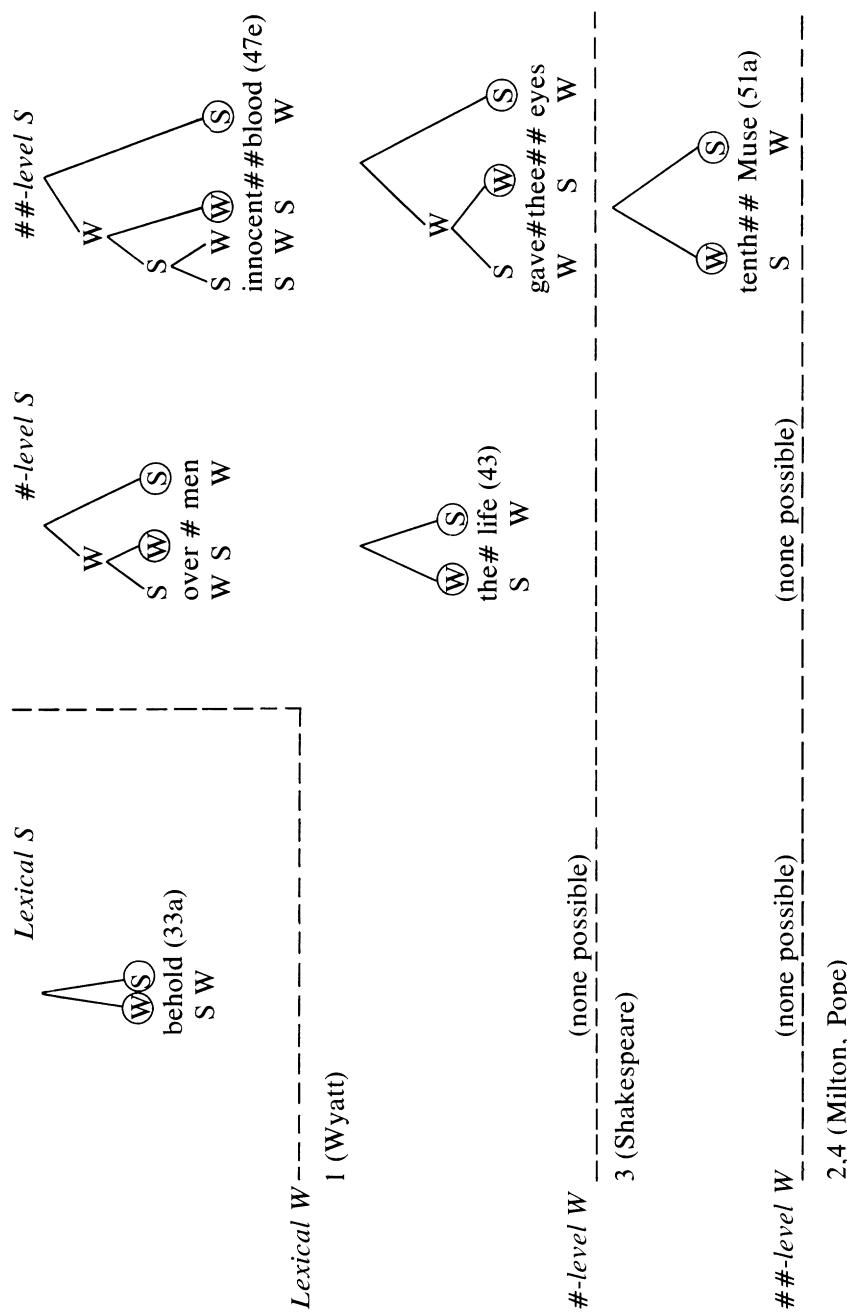
System 4: Pope

- (i) M commands S, and S is lexical or $\#$ -level (Table 1);
- (ii) (= 40, 62) S commands M, and M is a lexical W, or M is a terminal W and S is not dominated by a W (Table 2).

Systems 1–4 form a partially ordered hierarchy:



Each system of constraints entails the ones above it in (74). Hence any alignment of stresses with the basic metrical pattern that is found in Milton or Shakespeare is also metrical in Wyatt, and any that is found in Pope is metrical for all the others, but Milton and Shakespeare each have lines that would not be allowed by the other. It is fascinating that precisely the same relationship was found in SSM (p. 606) between

Table 2: *S commands W*

Milton and Shakespeare in the completely different area of enjambment. Milton and Shakespeare—the giants of English poetry, as if staking out different territories for themselves, like two bears on a mountain!

Another noteworthy feature of systems 1–4 is the formal relationship between their component rules. Compare their changing parts:

- System 1 — lexical W
- System 3 (ii) — lexical or #-level W
- Systems 2,4 (ii) — any W

and similarly

- System 2 (i) — # #-level M
- System 4 (i) — any M

The increasing stringency develops in an orderly way by the generalization of constraints along the hierarchy of stresses. The map of the metrical terrain that emerges from these comparisons is, I think, the most important thing here—the precise places where the poets draw the boundaries through it require extensive exploration that will undoubtedly change some of my provisional conclusions.

In discussing the various conditions under which lexical and nonlexical Ss show up in metrical W position, we have not yet mentioned the most familiar case of all: lexical Ss are permitted in Shakespeare after a phrase boundary (and a fortiori a sentence boundary) not preceded by a proclitic. The sentence-initial case is too well known to require illustration here; for the sentence-internal case compare the examples in (75):

(75) a. Be thy / intents / wicked / or chari/table (Ham. 1.4.42)
 b. And yet / dark night / strangles / the travel/ling lamp (Mac. 2.4.7)
 c. His eye / which scorn/fully / glisters / like fire (Ven. 275)
 d. My love shall in my verse ever live young (Son. 19)
 e. At random from the truth vainly expressed (Son. 147)
 f. Have I not seen dwellers on form and favor (Son. 125)
 g. Thoughts tending to content flatter themselves (R2 5.5.23)
 h. When workmen strive to do better than well (Jn. 1.2.28)
 i. Doth dogged war bristle his angry couch (Jn. 4.3.149)
 j. Pale as his shirt; his knees knocking each other (Ham. 2.1.81)

This principle again holds for any lexical S, not merely for the primary stress of a word (cf. section 2 above). It accounts for lines like (76):

(76) *Meso/potam/ia, and / the shel/ters whither* (Ant. 3.1.8)

It goes without saying that poets like Pope, who normally bar even #-level Ss from W position, allow them there phrase-initially.

What must be added to the rules of (73) to account for this special status of phrase-initial S?

The answer is: nothing. Phrase-initial S is not blocked from metrical W position by any of the rules in (73), since such an S never commands or is commanded by any node M to its left. Therefore, the facts are already correctly predicted by the systems 1–4 as they stand.

The point is more straightforward than it may first appear. What makes mismatches of Ss with metrical Ws unmetrical, as we have seen quite clearly, is that the Ss are bracketed in certain ways with nodes on their left. But by our assumption, the syntactic boundaries that trigger “inversion” are the maximal domains of bracketing. It follows that the initial syllable of such a domain cannot be bracketed with anything to its left, and therefore the bracketing that is necessary for unmetricality can never arise. The “license” of phrase- or clause-initial inversion, then, is no isolated oddity; it is simply one limiting case of the conditions represented in Tables 1 and 2 and rule (73).

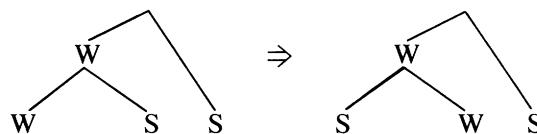
6. The Rhythm Rule and Related Problems

The well-known “Rhythm Rule”, which still functions to retract the stress of words like *fifteen*, *Tennessee*, and *Alabama* in prenominal position, as in *fifteen reports*, *Tennessee Williams*, *Alabama College*, was more widely applicable in the language of Shakespeare’s poetry. Words like *forlorn*, *extreme*, or *supreme*, and compounds like *unknown* and *outworn* appear systematically in WS position predicatively (77a) and in SW position attributively (77b):

(77) a. And who she finds *forlorn* she doth lament (Ven. 1500)
 b. And from the *forlorn* world his visage hide (Son. 33)

The rule has a natural formulation in Liberman’s representation of stress

(78)

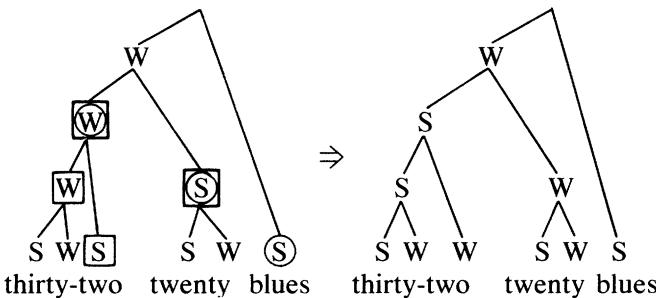


where W, if terminal, must be [+stressed], though none of the nodes is necessarily terminal.⁵ Rule (78) may apply in several places in a string simultaneously, as in *32-20 Blues* (title of a blues by Robert Johnson) or *The unseen good old man* (Ham. 4.1.12):

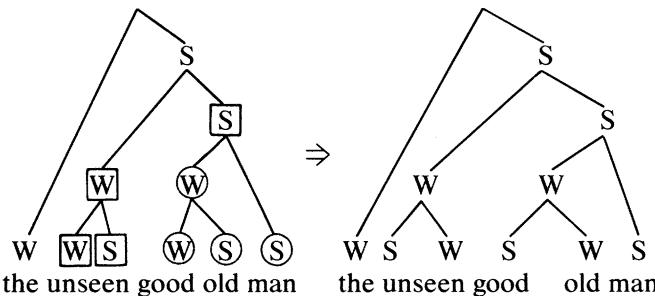


⁵ The rule does not apply, however, when it would produce the pattern s s w (that of *hierarchy*), as in *gigantic task, Montana governor*.

(79)



(80)



The relevant nodes in the two applications are circled and boxed, respectively.⁶

If we assume that the rule had the same environment as in present-day English, applying before a following S, not necessarily terminal, then we must also assume that it was at least in some cases optional. Otherwise words subject to it could never be used attributively with iambic nouns, for retraction there would yield violations of (73), e.g. **extreme desire*, **unkind remarks*. Since such collocations, though rare, do occur a few times, the rule must have been suspendable, at least in this environment and for certain words:

(81) Did gage them both in an unjust behalf

(1H4 1.3.173)

There are several other phenomena of apparent rhythmic accent displacement that may be related to rule (78). As mentioned in section 1 above, SSM set up a prosodic rule (PR) to discount all but the highest stress within each domain bounded by ##. Besides admitting the subsidiary stresses of words like *maintain* and *contact* in metrical W position, PR also neatly permitted the stressed syllables of disyllabic proclitics in metrical W position:

⁶ After this article was written, I was able to see the important dissertation of Beth Bjorklund (1975). Though her approach is a bit different, her results for English in general support the analysis proposed here. According to her, German has a system that differs from any of the English ones in some crucial details.

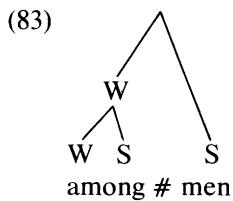
The Rhythm Rule explains her observation (p. 181) that sequences like *good old man* are generally put in SWS position, while those like *the old man* can be positioned either at SWS or WSW (cf. above, section 4).

(82) a. Henceforth be never numbered *among* men (M.N.D. 3.2.67)
 b. Weighed *between* loathness and obedience, at (Tmp. 2.1.131)
 c. Words *before* blows; is it so, countrymen (J.C. 5.1.27)
 d. Your master's confidence was *above* mine (Tim. 3.4.31)
 e. And I will comment *upon* that offense (Son. 89)

But since, as we saw earlier, there can for other reasons be no such rule as PR, we know that it cannot be the true explanation of (82).

Even supposing that some such rule as PR did exist, there would remain a difficulty in supposing that it applies in cases like (82). This is that the overwhelmingly favored treatment of disyllabic proclitics is still to put their stresses into S position. The point was made sharply by Magnuson and Ryder (1971, 206): "If one does not posit underlying stress for such words, how is it possible to explain that in the Shakespeare sonnets, for example, disyllabic prepositions of the type *beneath* are initiated 98 times out of one hundred in metrical *odd*?" (i.e. in weak position). But PR, by eliminating those stresses, leaves us high and dry in trying to answer this question, by wrongly predicting a random distribution of WS and SW in such words. The difficulty could not be overcome by making PR a highly marked option, for there is nothing unusual about the weak positioning of the subsidiary stresses in disyllabic lexical items such as *maintain* and *contact*. So the apparent explanation we have lost was far from satisfactory to begin with.

The configuration in question, i.e. (83)

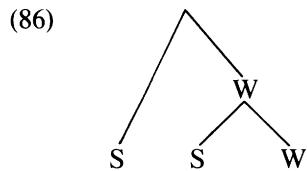


The crucial question is whether they can be so positioned when not permitted by (73), as will be the case when they are themselves preceded by proclitics, in hypothetical examples of this sort:

(85) *Unlock this casket, *if after* three nights
 *Put up your bright swords, *for under* this oath

It appears that such examples do not exist, which is predicted by the new solution but remains an accidental gap in the old one. There is thus some support for the idea of extending (78) in the limited way proposed here, though it is by no means as certain as the evidence for (78) itself.

A final, and very difficult problem concerns the treatment of trisyllabic compounds of the structure shown in (86):



Their usual positioning is at WSW, as predicted by (73). However in SSM I noted some examples of the opposite SWS positioning. A closer look at these and other similar cases shows that the exceptional behavior is not merely random.

The anomalous positioning seems to occur only with certain kinds of compounds. Probably the most common type of all, the highly productive (especially so in Shakespeare) attributive compounds like *scent-snuffing*, *foul-reeking*, *swift-footed*, *flint-hearted*, and *deep-sunken*, are absolutely confined to WSW position. As far as I have been able to determine, there is not one case in Shakespeare of the type (87):

(87) *With life-/giving / warm showers . . .
 *His love-/kindling / caress . . .

Noun compounds fall into two categories: some are positioned in the expected fashion at WSW, e.g. *musk-roses* (M.N.D. 2.1.252, 4.1.3), *world-sharers* (Ant. 2.7.70), *rose-water* (TS Ind. 1.56), *fore-spurrer* (M.V. 2.9.95), *dive-dapper* (Ven. 86). Others are consistently SWS, e.g. *bedfellow* (13x), *torchbearer* (5x), *mulberries* and all other compounds in *-berry* (11x), *housekeeping* (3x). It is significant that very few compounds are positioned in both ways: the only case I found is *grandfather*, which is usually SWS but WSW a few times. The one generalization, which only holds as a general tendency, is that WSW compounds—the attributive ones as well as the nouns—are more frequent as a type, but less frequent as individual items, than the SWS compounds. In other words, the WSW case comprises the productive cases, many of which are likely to have been nonce creations. Hence their low individual but high overall frequency. And the SWS case comprises relatively established, familiar words, including all, though not only, the compounds with members that have no existence in

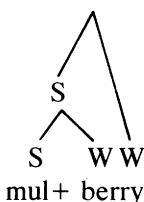
their own right (e.g. *mul-*, *bil-* occur only in compounds with *-berry*, and *-monger* occurs only as a second member) or whose meaning is not transparently related to the meaning of the whole (e.g. *strawberry*, *codpieces*).

Many noun compounds tend unmistakably to be avoided in verse altogether. Remarkably many of the relatively established compounds, like *hedge-sparrow*, *cock-pigeon*, *flap-dragon*, *grave-maker*, and *herb-woman*, are found only in the prose portions, though these form the smaller part of the total text of the plays. The contrast is striking with the participial compounds like *swift-footed*, which are far more common in verse.

What lies behind these mysteries? It is no news that *some* linguistic distinction must be made between fully resolvable and more idiosyncratic compounds. Dan Kahn has pointed out to me such phonological differences as that between *high school* (irresolvable, with a short diphthong for some speakers) and productive compounds like *pie school* 'school having to do with pies', with the same vocalic nucleus as the simplex *pie*. Some compounds, then, behave like simple words phonologically. That suggests a different strength of internal boundary, viz. *high+school* vs. *pie##school*.⁷

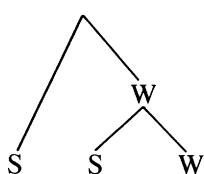
Such a distinction appears to provide the basis for understanding the metrical differences too. The elimination of the internal word boundary has two effects: it makes the initial S lexical, and it allows metrical rebracketing. Rebracketing would have the effect of suppressing the (now structurally unmotivated) medial stress completely. Indeed it is likely that just this happened in some of the more frequent noun compounds, such as those with *-berry* and *-fellow*, e.g. (88)

(88)



with the stress pattern of *silvery*—still a common pronunciation, though restressed variants are commonly heard, especially in American speech. In other compounds, such as *hedge-sparrow*, *primroses*, and *sea-farer*, retention of the secondary stress seems more likely, viz. (89) with the stress pattern of *hierarchy*.

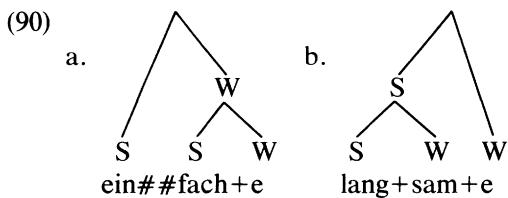
(89)



⁷ My proposal is indirectly strengthened by Allen (1975). She presents solid evidence for a parallel division of Welsh compounds into two structurally differentiated classes, with members separated by ## and +, respectively.

Now these are by and large just those compounds that we noted were used reluctantly in verse, when at all, though if they are used they are put in SWS position. And given precisely the representation of (89), rule (73) explains both these peculiar facts. For according to (73), system 3, there is actually no legitimate way of fitting in words of this structure, though if forced to put them *somewhere*, we must choose SWS as the lesser evil, since it involves the relatively minor modification of dropping part (ib) of system 3, i.e. of lapsing momentarily into the Miltonic system of versification.

The interpretation given in SSM of Chisholm's (1973) findings about German can now be translated directly into the new treatment. Chisholm found that trisyllabic words like *einfache* always appear in WSW position, while those like *langsame* always appear in SWS position, the distinction depending on the type of derivational suffix. If we assume that the representations are respectively (90a) and (90b)



where the structural difference has language-internal motivation, as shown in SSM, then the observed difference follows directly if German is also assumed to have the rules of (73), system 3 or 4.

7. The New Tension Index

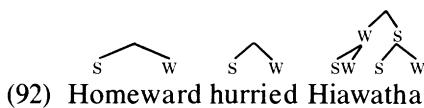
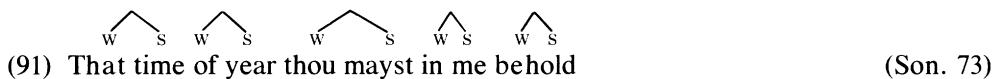
SSM needed a rather elaborate setup for measuring metrical tension or complexity, involving a summation of the numerical differences between the linguistic stress values and the stress values constituting the basic metrical pattern. A weakness of this procedure was that it was brought in ad hoc, and bore no relationship to the procedure for establishing metricality. The measure (10) that our new approach makes possible, viz. that of counting the number of mismatches between the stress pattern and the basic metrical pattern, is not only simpler but relies on exactly the same matching operation that determines metricality. The factors that make a line unmetrical are now seen to be nothing but a special subset of the factors that make a line metrically complex.

The inadequacy of the SSM tension index is seen especially clearly in the poets discussed in section 3 (Wyatt, Surrey, Milton, Donne, Hopkins). While they do not categorically exclude lexical Ss from metrical W position, they certainly do not place them in random fashion. In addition to being excluded categorically (except for Donne and marginally Wyatt) when there is a concomitant bracketing mismatch, as shown above, the matching of lexical Ss with metrical Ws is somewhat unusual even in the optimal case when the bracketing is retained. This means for SSM that the tension index must, for those poets at least, include a relativized counterpart of the monosylla-

ble condition (MR 2b). This unavoidable duplication of tension index and metrical rules must count against the theory of SSM.

In the theory as revised here, such difficulties never arise. Metrical complexity is now characterized *in exactly the same way for all poets*: given a specification of the metrical form (e.g. iambic pentameter), the theory automatically counts any mismatch as adding to the metrical complexity of a line. What differentiates metrical usage (e.g. Shakespeare vs. Milton vs. Pope) is never what constitutes a mismatch, but only where the boundary between permissible and impermissible mismatches is drawn, e.g. by rules like (73), and perhaps also by some limitations on overall complexity. Hence it is predicted, correctly as it happens, that the preferred location of lexical Ss is at metrical S even in the work of poets who permit them to appear at metrical W too. Conversely, the revised theory predicts that bracketing mismatches should contribute to metrical complexity even where they are metrically permissible. For a poet like Donne, this predicts that lines like (33), with coinciding mismatches of lexical labeling and bracketing, should still be more complex than lines like (31), (35), and (37), with labeling mismatches only, which is confirmed by their relative infrequency.

More generally, and more surprisingly, this implies that bracketing mismatches should contribute some complexity even where there are no labeling mismatches whatever. The metrically most banal iambic or trochaic line would then be one wholly composed of “natural” iambs or trochees, and (91) should accordingly be a *simpler* line than e.g. (1).



In attempting to verify this prediction of the theory we have to leave the comfortably tangible data of what poets do and don't do, and rely rather on various necessarily delicate judgments of relative metrical complexity, preferred scansion, and so forth. To be on the safe side, I will adduce only the independent testimony of poets and critics who were simply reporting their own perceptions and obviously had nothing like my particular axe to grind.

It is significant that precisely here, far away from all academic metrical theory, we find again and again the spontaneous expressions of an intuition that no metrical theory so far to my knowledge has explicated: that the meter of a line is determined, even against the metrical context, by the predominant metrical structure of the *words* in it. For example, Hopkins (Abbott (1955, 87, 136)) remarks in passing that Gray's gloomy sonnet *On the Death of Mr. Richard West* is “remarkable for its falling or trochaic rhythm”:

(93) In vain to me the smiling mornings shine,
 And reddening Phoebus lifts his golden fire;
 The birds in vain their amorous descant join,
 Or cheerful fields resume their green attire;
 These ears, alas! for other notes repine,
 A different object do these ears require,
 My lonely anguish melts no heart but mine,
 And in my breast the imperfect joys expire.
 Yet morning smiles the busy race to cheer,
 And new-born pleasure brings to happier men;
 The fields to all their wonted tribute bear;
 To warm their little loves the birds complain;
 I fruitless mourn to him that cannot hear,
 And weep the more, because I weep in vain.

From the viewpoint of orthodox metrics, Hopkins's remark is absurd, since every line in the poem scans readily as a perfectly routine iambic pentameter, which moreover is the normal measure of sonnets. But the approach proposed here does provide some rationale for his feeling that Gray's sonnet has a "trochaic rhythm". We note that lexical trochees outnumber lexical iambs in this sonnet by 23 to 8. Even though #-level iambs in turn dominate, the lexical stresses seem to be particularly central in guiding the perception of meter.

I turn now to some further examples in support of the role that the present theory assigns to bracketing.

Goethe, in conversation with Eckermann (6.4.1829), scans for him the following line as a series of trochees with an initial extrametrical syllable, except that the penultimate foot is dactylic:

(94) a. Ců/pídő, / lósér / éigěn-/sínnígěr / Knábě

This line might be rendered as shown below:

b. Ōh / Cúpíd, / fícklě, / évér / óbstínáte / féllőw

In standard metrical theories, it is just a tossup between Goethe's trochaic scansion, which requires an initial extrametrical syllable, and taking the line as iambic, with a final extrametrical syllable. The theory I have proposed here explicates Goethe's intuition that the line is trochaic. If we assume that metrical feet are not strings but trees, which are matched to the trees of the linguistic stress pattern, with the simplest matching being the one that gives the greatest structural congruence, then it follows at once that the trochaic scansion is less complex here.

In discussing Tennyson's *Lotos-Eaters*, Saintsbury (1923) remarks: "The second movement, which has been strangely taken for a modern instance of acephalous

Chaucerian lines, loses all beauty if so regarded, and spoils the concert completely. It is a shift to trochaic base . . .” (p. 197):

Then methought I heard a mellow sound,
Gathering up from all the lower ground;
Narrowing in to where they sat assembled,
Low voluptuous music winding trembled,
Woven in circles.

The present theory supports Saintsbury’s judgment on a rather more precise basis than he was able to adduce for it.

As a further exhibit I quote the following passage from Egerton Smith (1923, 46) (double acute accents of the original replaced by boldface accents):

The omission of the first thesis in lines of the four-foot iambic scheme often gives a trochaic lilt to the line, as in Milton’s *L’Allegro* and *Il Penseroso*:

Tówred cíties pléase us théñ
Dáncing in the chéquer’d sháde
Énding òn the rússling léaves
Sóftly òn my éye-lids láid
Stóoping thróugh a fléecy clóud

But quite the same effect is not felt in many others:

Thére / let Hý/men óft / appéar
Rób’d / in flámes / and ám/ber líght
Mírth, / with théé / I méan / to líve
Bláck, / but súch as ín / esteéem

and hardly even when there is a feminine ending:

Stréit / mine éye / hath cáught / new pléas(ures)

although the following lines suggest the trochaic cadence:

Whílst the Lántskip róund it méasures

But in similar lines of five feet this movement is rarely maintained to the end. For instance, the following lines from Chaucer’s *Prologue* recover their balance almost immediately after the opening, and fall into the normal cadence:

Twénty bóokës clád / in blák / and réed.
Gýnglen in / a whíst/lynge wínd / als cléere

All these intuitions are exactly what we would predict if we take bracketing to be part of metrical form. Smith, like the other authors I have cited, does not himself try to articulate what lies behind them.

Finally, Nowottny (1962) analyzes this poem by William Browne as having three “predominantly trochaic” lines followed by three “predominantly iambic” lines, and notes that this metrical reversal coincides with the reversal of attitude from grief to defiance:

s w s w s w s
(95) 1. Underneath this sable Herse

S W S W S W S S

2. Lyes the subject of all verse:
 S W S W S W S W

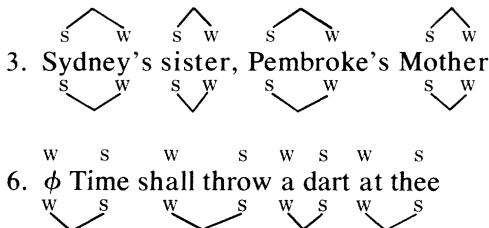
3. Sydney's sister, Pembroke's Mother:
 S W S W S W S W

4. Death, ere thou hast slaine another,
 S W S W S W S S

5. Faire, and learn'd, and good as she
 S W S W S W S

6. Time shall throw a dart at thee.

Hascall (1971) notes that Nowottny's evidently correct observation has no principled basis in metrical theory. But if we match trees, Nowottny's point is strikingly vindicated. Lexical and #-level trochees predominate in the first half, lexical and #-level iambics in the second. There are some neutral cases, but only two contrary ones (phrasal iambic *all* verse in 1.2 and lexical trochaic (*an*) *other* in 1.4). The match is perfect in lines 3, 5, and 6:



The Gray and Tennyson examples suggest that lexical bracketing is more salient than #-level bracketing in the perception of meter. In both, the two are at odds, and the lexical bracketing is decisive. But as shown for example by the second half of the Browne poem, #-level bracketing is decisive in the absence of any polysyllabic words. This is of course the very same hierarchy that we discovered in a different aspect at the end of section 5, where it determined the relative saliency of labeling mismatches.

There obviously remain some delicate problems in weighting the different elements of complexity in the right way. For example, what exactly is the relative importance of bracketing and labeling mismatches? Labeling mismatches seem to be more salient, but how much, and why? At this point there is not much that can be said in reply to such questions; but there is some progress in our even being able to raise them.

8. Hierarchical Organization in the Metrical Pattern

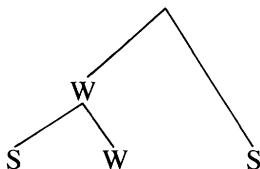
In at least some varieties of anapestic verse, such as that of Byron, the first but not the second of the two weak syllables can be occupied by a lexical S:

(96) . . . by the dawn's $\left\{ \begin{array}{l} \text{early} \\ \text{*intense} \end{array} \right\}$ light

In SSM, yet another metrical rule, MR 2d, was introduced to account for this. In the

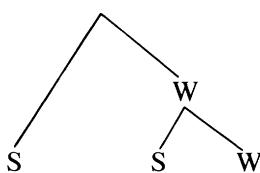
present framework, however, nothing need be added to the system we already have. Given that metrical feet are represented as binarily branching trees, we must assign an internal structure to any ternary foot. If we assume that an anapest is metrically of the form (97), the observed difference in its two weak positions follows directly from (9b) and (73).

(97)



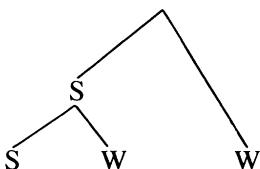
Alan Prince has pointed out to me that in some English dactylic verse, the feet have the form shown below, where the first but not the second of the two weak positions can be filled by a lexical S.

(98)



In some other languages with stress-based versification, scholars have found two forms of dactylic meter. In a close study of the dactyl in Swedish verse, Holmberg (1929, 146) observes that lexical Ss are freely used in the first weak position in lyric dactyls, whereas neither weak position admits them in hexameter (whether translated from the classical languages or employed for modern narratives). The latter, then, has a different structure, which is represented by the following foot schema:

(99)



It is interesting that one and the same poet (e.g. Esaias Tegnér) will differentiate the two genres on this perhaps rather obscure point of metrical detail. Even more remarkably, a similar split is found in Finnish (Sadeniemi (1949, 156–175)), and in German. For example, a dactylic foot such as *Erlkönig*

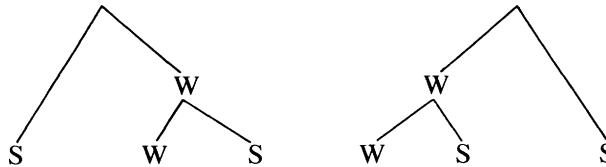
(100) *Erlkönigs Töchter am düstern Ort*(Goethe, *Erlkönig*)

is not found, say, in Goethe's *Römische Elegien* or *Reineke Fuchs*.

Among the dendrologically possible trisyllabic feet, the ones that seem to be

missing are dactyls or anapests with a *rising* weak part:

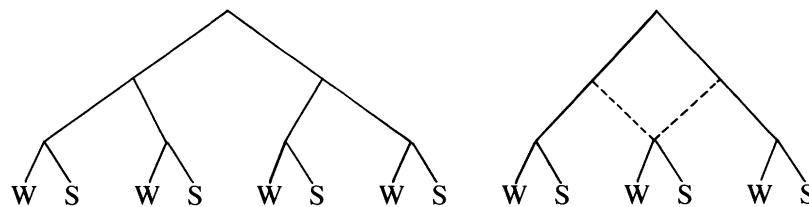
(101)



If there indeed are no such meters, the task of constructing the pattern generator (cf. the overall scheme (4)) may after all have nontrivial aspects even for English.

The dipodic character of many English meters can be explicated by assuming that the feet themselves are bracketed into larger units. For example, the fourteener is typically organized as follows

(102)



(where the dotted line indicates two alternative groupings of the penultimate foot). The largest break corresponds to an obligatory caesura; Blake requires at least a phrase boundary there, and the next largest breaks are also typically marked by phrase boundaries (examples below are from *America*):

(103) What God is he writes laws of peace // and clothes him in a tempest?
What pitying Angel lusts for tears // and fans himself with sighs?

Blake allows the caesura to shift one syllable to the right:

(104) a. The King of England looking westward // trembles at the vision
b. In the flames stood and view'd the armies // drawn out in the sky
Washington, Franklin, Paine, and Warren, // Allen, Gates, and Lee

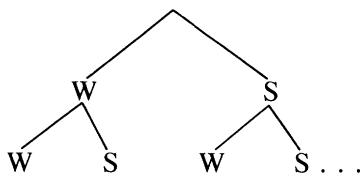
Much less often, it shifts to the left:

(105) a. What crawling villain preaches // abstinence and wraps himself
b. The doors of marriage are open, // and the Priests in rustling scales
Rush into reptile coverts, // hiding from the fires of Orc

The labeling of the higher nodes corresponding to the feet is clearly dominated by an alternation of strong and weak, corresponding to the dipodic structure revealed also by the placement of syntactic boundaries. There are both primarily rising rhythms

of the form (106), as in most of the lines cited above, and mixed rhythms, for example (107):

(106)



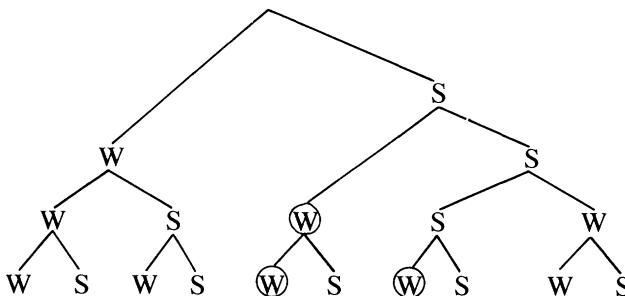
(107)

The citizens of New York close their books and lock their chests;
 The mariners of Boston drop their anchors and unlade;
 The scribe of Pennsylvania casts his pen upon the earth;
 The builder of Virginia throws his hammer down in fear.

To what extent these are metrically significant is not clear.

I conjecture that the iambic pentameter has the basic structure (108).

(108)



This labeling of odd and even nodes as Weak and Strong is repeated at each successive level of bracketing. If we now suppose that derived patterns are admissible if they involve bracketing mismatches of W nodes only (we can visualize it as the reattachment of W nodes in the basic pattern (108), necessarily to the left, in this case), we can further explain the location of caesuras in the line. It is easily seen that the only Ws whose reattachment can change the location of the main break in the line are the three that are circled in (108). The unmodified tree of (108) corresponds to a caesura after the fourth metrical position. By reattaching the leftmost circled W, we get a caesura after the fifth; by reattaching the W node corresponding to the third foot, we get a caesura after the sixth position; if we then in addition move the last circled W, the caesura ends up after the seventh position. No other reattachments of Ws can change the position of the caesura. But the fourth, fifth, sixth, and seventh positions are in fact known to be the primary locations of the caesura in the iambic pentameter (Dillon (1977)).

9. Extrametrical Syllables and Unfilled Weak Positions

The metrical rules must also allow for mismatches in the number of syllables, under certain strictly limited conditions. In this section I turn to the special conditions that

hold in this respect at the positions between a sentence boundary and a metrical S adjacent to it. First, it is possible to omit the initial, weak position in iambic verse, creating so-called “headless lines”. These are rare in Shakespeare and later English poetry. They do not occur at all in Shakespeare’s sonnets, in *Venus and Adonis*, and in *The Rape of Lucrece*, but there are some examples scattered through the plays; for example:

(109) a. Bootless home, and weather-beaten back (1H4 3.1.67)
 b. Knowing nought, like dogs, but following (K.L. 2.2.86)

The omission of weak positions occurs also inside a line after a syntactic break:

(110) Why so didst thou: seem they grave and learned (H5 2.2.128)

More frequently, a rule is applied that allows an “extrametrical” syllable before a syntactic boundary. It must be a sentence boundary not preceded by a proclitic—roughly, it must be a break at which at least an orthographic comma could stand:

(111) a. Laugh at / me, make / their pas/time at / my sorrow (W.T. 2.3.24)
 b. That is / the madman. / The lov/er, all / as frantic (M.N.D. 5.1.10)
 c. Must curt/sy at / this censure. / Oh, boys, / this story (Cym. 3.3.55)

Though this was not noted in SSM, extrametrical syllables occur only at strong positions, so that, for example, in (112) *slave* could not be replaced, say, by *hermit*:

(112) But, like / a sad / slave, stay / and think / of nought (Son. 57)

And we have (113) but not (114):

(113) So dear / the love / my peo/ple bore me: / nor set (Tmp. 1.2.141)
 (114) *So dear / the love / my friends / bore me: do / not set

This can be accounted for in the new theory by revising rule (9a):

(115) *Metrical Rule, Part a (final version; supersedes (9a))*

Terminal nodes correspond one-to-one, except that the presence or absence of a W in L is optional between #_S[# and metrical S.

But now an interesting prediction immediately follows. Since W has only a *relational* meaning, that the syllable with which it is associated has weaker stress than the syllable with which the corresponding S is associated, we are saying not that the extrametrical syllable must be unstressed, but that it must have weaker stress than the preceding syllable. But this is exactly right: in Shakespeare, the extrametrical syllable may, for example, be the second member of a compound

(116) Quite overcanopied with luscious woodbine (M.N.D. 2.1.251)

which is permitted by the indicated rule, since the stress of *woodbine* must be

represented as $\hat{S} W$. In SSM, an ad hoc condition on the corresponding metrical rule (MR 3) was needed to secure this result.

A further remark is necessary here. Milton, and a number of other poets, do not allow second members of compounds as extrametrical syllables. But this simply follows from a more general restriction that holds in their versification, namely that the extrametrical syllable must be a *lexical W*. It must, in effect, be part of the same word as the preceding syllable.⁸ Not surprisingly, there is also an intermediate system in which the extrametrical syllable must be a lexical or #-level W, so that a preceding # but not ## is allowed. This is the case in Shakespeare's poems (as opposed to the plays), where we do not find extrametrical second members of compounds, while lines like (117) from *Venus and Adonis* are still common:

(117) a. Sick-thoughted Venus makes a main unto him (5)
 b. Oh, what a war of looks was then between them! (355)
 c. Though nothing but my body's bane would cure thee (372)

Far from being a difficulty for the new theory, these conditions too can be given a natural formulation in it and so add another piece of supporting evidence for it.

In trochaic verse, there are mirror-image analogues to these rules, which allow an extrametrical syllable before a strong position after a sentence boundary, and omission of a weak syllable before a sentence boundary. If both occur, the line looks iambic:

(118) And / through the / rough world / follow / thee
 (Shelley, *Mask of Anarchy*, St. 11)

Though trochaic lines commonly begin with //[˘], superficially like iambs, their initial extrametrical syllable cannot (unlike the first syllable of an iambic line) receive a main stress. That is, trochaic lines of the following sort are not found:

(119) a. *Wit/ches pur/sued the / dreaming / child
 b. *Erl/kings pur/sued the / dreaming / child

The initial extrametrical syllable must be either unstressed (the usual case) or at least

⁸ There is one exception—obviously mimetic of the clumsiness described:

Gambolled before *them*, th' unwieldy elephant (P.L. 4.345)

My formulation presupposes that “stress-neutral” suffixes in English are not preceded by #. Milton can end a line in *waking* but not *wake them*, which I take to be represented as *wak+ing* and *wake#them*. This representation is required everywhere in metrics, as far as I can see. For example, *love* is a monosyllable in *love#thee* but not in *lov+ing*, so that a Shakespearean line can begin *If I love thee*, but not **If my loving . . .* The linguistic evidence adduced in Chomsky and Halle (1968) in favor of the internal word boundary has largely evaporated through recent research. Given Liberman's theory, stress no longer provides a reason. (Cf. discussion in section 2 above). The evidence from segmental processes has also been somewhat weakened. Unpublished work by Deirdre Wilson, Alan Prince, and Dan Kahn suggests that there is in reality a complex situation with virtually every rule demanding a somewhat different assignment of “word boundaries”, and much lexical arbitrariness (cf. *longer*, with *g*, vs. *wronger*, with no *g*, or cases like *monophthongize* with [g] (under one pronunciation) indicating absence of #, but initial stress requiring #).

have a weaker stress than the next syllable:⁹

(120) *Dare* frame thy fearful symmetry
 (121) *Full* fathom five thy father lies

(Blake, *The Tiger*)
 (Tmp. 1.2.400)

But why allow for extrametrical syllables by a metrical rule, instead of making them optional elements of the basic pattern (cf. the solution proposed by Halle and Keyser (1971, 172))? The theory and the facts agree in dictating this treatment.

The theoretical motivation has to do with the fundamental role of feet in the basic metrical pattern. This is a point on which my proposal differs from a wide range of modern approaches to metrics. In some of them, such as the Halle–Keyser theory, feet are not recognized at all. In general, feet cannot be accorded a very significant status in any metrics that is based purely on the distribution of phonetic or phonemic stress in the traditional sense. Jespersen (1900/1933) refers to the foot as a “paper idea”. Chatman (1960, 161) is quite explicit:

Poetic segmentation seems applicable in English for only one purpose—to explain the sequential norm and variations of points and zeroes. But I have never been able to discover a good reason for assuming that a metrical accent point has any closer connection with the zero that it follows than with the one that it precedes.

And in *Theory of Meter* he claims that feet are introduced only for simplicity of analysis:

It is simpler to assume that the series ----- consists of five recurrences of one event, ~, than that it constitutes some single homogeneous event. (1965, 116)

Feet have nothing else to do with language: they are non-grammatical and non-lexical, and so do not bear any relation to word-integrity, phonological juncture, or any other real linguistic feature. Foot boundaries may split words and two words separated by even the strongest juncture (say the one represented by a period) may occur within the same foot. Feet, in short, are purely ‘notional’.” (1965, 117)

Cf. Allen (1973, 122–125) for a more nuanced discussion along the same general lines. Allen concludes that the foot is “a unit of structure rather than of composition or performance, or of appreciation.” The tradition of “musical” scansion also downplays the foot, or even denies the whole concept. This happens when verse is scanned mechanically by “bars” that begin by definition with the stressed syllable, so that for instance iambs become indistinguishable from trochees with anacrusis and final truncation.

⁹ This was made explicit by Hascall (1971), though his formulation is actually somewhat different. He says that trochaic lines cannot begin with ~~~ (p. 219). But this is incorrect, for irrelevant reasons. Such trochaic lines can arise where no extrametrical syllable is involved, simply by inversion of the second foot, as in the following line:

Cásts tō / thě fát / dógs thăt / líe

(Shelley, *Mask of Anarchy*)

As Hascall says clearly elsewhere (p. 225), the restriction has to do with the extrametrical syllable.

Poets and critics, by contrast, have generally insisted on the reality of the foot. Our findings bear out their view in several ways. The “notional” reasons for recognizing feet mentioned by Chatman carry over in that the pattern generator as a component of the metrical theory provides explicit motivation for considering basic metrical patterns to be formed by iteration from a small number of basic units. More importantly, though, the feet are required by the bracketing that we have found to figure crucially in the perception of metrical form. In section 7 I argued that mismatches of bracketing are in themselves a source of metrical complexity, and sections 3–5 demonstrate that certain labeling and bracketing mismatches, each of them tolerable in themselves, nevertheless can combine under various circumstances to produce unmetrical results.

The treatment of extrametrical syllables as literally extra-metrical is also inescapable on a number of straightforward factual grounds. Most simply, it correctly lets extrametrical syllables occur also inside lines before syntactic boundaries, as in (111b,c). There they could hardly be part of the basic pattern. It follows that a rule is required if the relationship between line-final and line-internal extrametrical syllables is to be expressed.

Second, a rule predicts that extrametrical syllables are not allowed at the end of a line not ending in the configuration $\#]_s\#$. In fact there are normally no cases like (122), where there is $\#\#$ but no $_s[$ between the lines:¹⁰

(122) *For Henry
Pursues thee now with twenty thousand men

In the later plays, where lines commonly end in proclitics, as in (123), there nevertheless are none like (124), with the proclitic as the eleventh, extrametrical syllable. Again, this is predicted since the lines here are separated by $_s[$ but not $\#\#$:

(123) Their manners are more gentle-kind than of (Tmp. 3.2.32)
(124) *Their manners are more gentle-kind than those of

Similarly, in Milton, who permits adjectives to be split from their nouns, as in (125), there are no lines like (126) where the adjective ends in an extrametrical syllable.

(125) thy divine // Semblance
(126) *the smiling // Serpent

Moreover, allowing for extrametrical syllables by rule solves a problem raised by Halle and Keyser (1971, 173):

The omission of the line-initial W where possible contributes to the complexity of the line,

¹⁰ With some exceptions in the late plays, e.g.

Leont/es open/ing his / free arms / and weeping
His welcome forth.

(W.T. 4.4.558.9)

which Saintsbury (1908, 36) terms “experimental”. Similarly A.C. 2.2.68–69.

whereas the omission of the line-final extra-metrical syllable leaves the complexity of the line unaffected. Although we have reflected this difference between the two parenthesized subsequences by adding an asterisk to the first set of parentheses . . . , we have at this point no explanation for the distinction.

But all the right distinctions are predicted without further ado by our new complexity measure (10), which simply adds up the number of mismatches. It entails that both headless lines and lines with extrametrical syllables are more complex than ordinary ten-syllable lines. This seems accurate. There is no question that *both* headless lines and lines with extrametrical syllables are significantly rarer than lines with the ten positions of the basic pattern. Poems are common in which one or both of these permissible mismatches do not occur at all—poems that, from our point of view, have the same basic pattern, but are based on a simpler metrical rule, *viz.* (9a). Another indication that extrametrical syllables add complexity can be seen in Saintsbury's observation (1908, 477) that Milton never ends his verse paragraphs with a line that has an extrametrical syllable. On the assumption that such lines are relatively more complex, this restriction on their occurrence can be understood. It becomes merely a special case of the phenomenon of closure (Smith (1968)), *viz.* that ends of poems or of parts of poems tend to relatively greater metrical simplicity.

Note now that it is only the particular basic metrical pattern required by our theory *together* with the complexity measure (10) that permits us to obtain this explanation. If extrametrical syllables were in the basic pattern, we would have to reason, in accordance with (10), that their omission would make a line more complex, which would be just the opposite from what we have seen to be really the case. On the other hand, the theory of SSM, while correctly eliminating extrametrical syllables from the basic pattern, lacked a general complexity measure such as (10) and so had no independent basis for predicting the asymmetry either.

10. The Interrelationship of Metrical Rules

It was observed in SSM (p. 611) that some metrical rules must be blocked from feeding others, but it was left open there how this was to be effected formally: by imposing the appropriate ordering on the metrical rules or by stipulating that they apply in simultaneous ("unordered") fashion. In the revised system we no longer have this leeway. The conditions governing the matching of stress and meter are inherently unordered: nothing changes into anything else in the course of applying the metrical rules, so that the order of their application can make no difference whatever. Let us now inspect some cases of what on the old theory would have amounted to potential interaction of the metrical rules, to see whether the more restrictive new theory can deal with them adequately.

1. A metrical W can be linguistically unrealized sentence-initially before a metrical S even when this S is filled by a W, *e.g.* (127).

(127) *And / a thou/sand of / his peo/ple butchered*¹¹ (1H4 1.1.42)

2. An extrametrical W is not allowed after a metrical W even when this metrical W is filled in the actual verse by an S.¹² (In terms of SSM, MR 2a and MR 2b must not feed MR 3b.) That is, Shakespeare has no lines like (128):

(128) **Duncan, Ross, / Northum/berland / and Per/cy fled*

3. An extrametrical W is never filled by an S syllable, even in a monosyllabic word. (In terms of SSM, MR 3b must not feed MR 2a.) For example, while lines like (116) occur, there are none like (129):

(129) **Quite o/verca/nopied / with lu/scious green vines*

It is evident that simultaneous application of the metrical rules is compatible with these facts, but no mode of ordered application is. To see this, consider facts 2 and 3. If MR 2 were to precede MR 3b, fact 2 could not be accounted for. If MR 3b were to precede MR 2, fact 3 could not be accounted for. The reverse is true if we assume that the rules apply interpretively, from actual verses to basic patterns. There would still be no way to order the rules sequentially. No problem arises, however, if the rules are applied simultaneously. Indeed, a somewhat stronger point can be made: not only are the observed relations between the metrical rules compatible with this theory, but *only* these relations are compatible with it. Given the metrical rules we must have, the only way they *could* be interrelated is the way in which they in fact are interrelated. That is, we now have in addition to an accurate description of the facts also an explanation for some of them.

In order to further explore this topic, we will bring two other metrical rules into the picture. The first, which mainly functions in older English poetry, is the resolution of a metrical position into a ŽCV sequence (where Ž is a short vowel, and C a single consonant) described for Chaucer and Shakespeare by Young (1923). It is shown to be necessary by lines like these:

(130) a. *And spends / his prodi/gal wits / in boot/less rhyme* (L.L.L. 5.2.64)
 b. *Come to / one mark, / as many / ways meet / in one town* (H5 1.2.208)
 c. *Followed / my banish/ment, and / this twen/ty years* (Cym. 3.3.69)
 d. *In the / afflict/ion of / these terri/ble dreams* (Mac. 3.2.19)

Resolution 1 (R 1)

Ž CŽ
 ↓ ↓
 M φ

(where M = metrical S or W).

¹¹ Similarly in the mirror-image case in trochees after an S, cf. (138).

¹² A corresponding fact for initial extrametrical W is that it is not inserted before an initial metrical W even though it is filled in the actual verse by an S, so that there could not be an iambic line beginning

**Recording / all things / for mute / poster/ity*

The last metrical rule we will mention here permits the vowel of a monosyllabic proclitic (i.e. an unstressed word not belonging to a lexical category) to be disregarded:

(131) a. A samp/le to / the youngest; / to the more / mature (Cym. 1.1.48)
 b. *In* the name / of fame / and honor, / which dies / in the search (Cym. 3.3.51)
 c. This man / hath bewitch'd / the bosom / of my child (M.N.D. 1.1.27)
 d. Hast eat / thy bear/er up. / Thus, *my* roy/al liege (2H4 4.5.165)
 e. Come to / one mark, / as many / ways meet / in one town (H5 1.2.208)
 f. *Are* you me/ditat/ing on / virgin/ity? (A.W.E.W. 1.1.115)

Resolution 2 (R 2)

W # P
 ↑ ↓
 φ M

Note now that since metrical rules are unordered, and therefore independent of each other, both Resolution and (115) can apply in the context of the same metrical S. This predicts that under certain precisely delimited circumstances more than one extra syllable ought to be able to occur in a single foot. Consider, then, the line (132):

(132) And take / my milk / for gall, / you murd/ering *ministers* (Mac. 1.5.49)

The last foot contains four syllables.¹³ The metrical analysis is as follows:

W S W W
 (133) . . . -ering min is ters #]s
 ↓(115) ↓(115) ↓R1 ↓(115)
 W S φ φ

We see that the first of the two extra syllables is allowed by R 1 and the second is extrametrical (115).

For this reason, although rule (115) was formulated to allow a single W syllable only, lines like (134) and (135) are not counterexamples to it.

(134) a. And I / must free/ly have / the half / of anything (MV 3.2.251)
 b. Than is / your *Majesty*; / there's not / I think / a subject (H5 2.2.26)
 c. To call / for *recompense*; / appear / it to / your mind (T.C. 3.3.3)
 d. O'erbears / your *officers*; / the rab/ble call / him lord (Ham. 4.5.103)
 e. What's He/cuba / to him, / or he / to *Hecuba* (Ham. 2.2.559)

(135) a. Unless / I spoke / or look't / or touch't / or carv'd to *thee* (C.E. 2.2.120)
 b. He did / bespeak / a chain / of me, / but had *it not* (C.E. 4.4.139)
 c. Indeed / I heard *it not*, / if then / draws near / the season (Ham. 1.4.5)
 d. Good sig/nor An/gelo, / you must / excuse *us all* (C.E. 3.1.1)
 e. Some griefs / are medi/cina/ble, that / is one of *them* (Cym. 3.2.33)

¹³ Actually, five, but *-ering* is metrically a single position by virtue of PR2, as discussed in section 11 below.

The restrictions on their occurrence prove that they are rather to be analyzed as lines where a foot happens to involve *both* an extrametrical syllable by (115) and resolution—by R 1 in (134) and by R 2 in (135).

I have not been able to find any clear cases where this more restrictive interpretation is excluded. If (115) is simply weakened to allow two extrametrical syllables, we could no longer explain, as we now can, the absence of lines of the following type (where W, S are the ninth and tenth metrical positions, respectively):

w s

(136) a. * ... / *his amnesty*

w s

b. * ... / *with eglantine*

w s

c. * ... / *and Guildenstern*

w s

d. * ... / *of Bolingbroke*

w s

e. * ... / *doth testify*

This means that (115) not only can but must be limited to allow only a single extrametrical syllable.

It is necessary to apply resolution *after* syllabic liquids and nasals are derived:

(137) a. This deity in my bosom. Twenty consciences (Tmp. 2.1.278)
 b. Saw'st thou the melancholy Lord Northumberland (R3 5.3.68)

Analogously, trochaic verse should have lines with two initial proclitics—the first extrametrical by (115), the second resolved by R 2. In fact, Hascall (1971, 221) cites the line (138):

(138) *In the deep wide / sea of / miser/y* (Shelley, *Euganean Hills*, 1.2)

Hascall considers it unmetrical. The present theory predicts that such lines should occur, and also correctly predicts that they should be rare, given that, as Hascall notes (p. 220) the prosodic option corresponding to R 2 is rarely invoked in trochaic verse.¹⁴

A second unorthodox feature of my formulation of (115) is the restriction of extrametrical syllables to the position after metrical S. I claim that apparent examples of extrametrical syllables in weak positions are eliminated by R 1 and R 2. For example, K.L. 3.4.76 is not to be scanned as (139a) but as (139b):

(139) a. Judi/cious pu/nishment! 'Twas / this flesh / begot
 b. Judi/cious punish/ment! 'Twas / this flesh / begot

If we let extrametrical syllables occur after weak positions, thereby allowing scensions like (139a), it ought to be the case that such lines also occur where an alternative

¹⁴ The material of Newton (1975) shows that the same metrical and prosodic rules hold in iambic and trochaic verse, though they are not utilized to the same extent in trochaic verse.

scansion of the type (139b) is unavailable. That is, we should find examples like (140):

(140) *Judicious blandishment! 'Twas this flesh begot

Their absence is correctly predicted by (115) in conjunction with the rest of the metrical system, in particular, R 1 and R 2 as constrained above.¹⁵

This explanation can be considered as additional confirmation for our treatment of extrametrical syllables. We have here a kind of argument that is familiar in linguistics but rarely possible in the study of literature. In the framework of a formal theory, a rule becomes more than simply a generalization about a set of observed facts. Given the theoretical framework and the rules already in the system, each new rule that we add to it may have farflung consequences, perhaps quite indirectly related to its intrinsic content. Apart from their purely heuristic value in leading us to factual observations that we might otherwise never have been alert to, formal theories also permit us to reason in ways that would not be possible on the basis of correlations of surface data alone.

11. The Status of Prosodic Rules

I have been assuming a theory in which a distinction is drawn between *metrical rules*, which govern the matching between linguistic and metrical representations, and *prosodic rules*, which apply to linguistic representation, giving them the form that they must have for purposes of the metrical rules. I have so far not formulated any of the prosodic rules, much less shown why they constitute a system distinct from the metrical rules. These two omissions will be repaired now.

I am not, however, going to try to give anything like a detailed analysis of English prosody. Unlike the case in metrics, there appears to be little of formal interest in this component that is not already familiar from purely phonological rules. Besides, the essential facts here are fairly well known, and I do not have much to add to such perceptive and thorough studies as Young (1923) and Tarlinskaya (1973). The purpose of this section is rather to analyze some representative cases and to show that, for these at least, prosody and metrics are interrelated in just the way predicted by our theory.

One prosodic rule that has in one version or another remained current throughout English poetry allows an unstressed vowel to be discounted if it follows another vowel or diphthong. It makes words like *going*, *flying*, *flier*, *liar*, *voyage*, *triumph*, and *pious* optionally monosyllabic for metrical purposes, words like *gaiety*, *piety*, *riotous*, and *poetry* optionally disyllabic, and so forth. In many of these cases the underlying representation is di- and trisyllabic either for morphological reasons (*go + ing*, *pi + ous* (cf. *pi + ety*), etc.) or because of morphophonemic alternations (*poetic*, *triumphant*,

¹⁵ Other apparent cases of two extrametrical syllables will of course be created by the Prosodic Rules 1–3 discussed in section 10.

etc.). So is the normal pronunciation, in all of these cases, though the reduced vowel may be slurred in rapid or careless speech (rather more rapid and careless speech, it should be noted, than is likely to be used in the normal recitation of most of the poetry in which this prosodic rule is observed). Like the other prosodic rules I know of in English, it is usually optional. I will state prosodic rules in the format of ordinary phonological rules.

Prosodic Rule (PR) 1

$$\overset{x}{V} \rightarrow \phi / V([-cons]) ___ \quad$$

where $\overset{x}{V}$ denotes an unstressed vowel

Not to be confused with Resolution is a prosodic rule that deletes an unstressed vowel medially before a sonorant followed by an unstressed vowel, regardless of the quantity of the preceding syllable, as in *victory*, *imagery*, *lingering*, *asterisk*, *legally*, *catholic*, *sickening*, *opener*, and *venomous*. Unlike the metrical principles of Resolution, which seem to have disappeared from English poetry in the 17th century, this prosodic rule remains current to this day, no doubt because it is, like PR 1, supported by a phonological analogue in fast or careless speech (Zwickly (1970); Selkirk (1972)).

PR 2

$$\overset{x}{V} \rightarrow \phi / V C_1 ___ \overset{x}{[+ son]} V \quad$$

where C_1 denotes one or more consonants

A third rule in this category turns an unstressed high vowel into a glide before a vowel, giving the familiar prosodic options of *envious*, *hideous*, and *annual* as having three syllables or two, *Antonio* and *continual* as having four syllables or three, and so on.

PR 3

$$\overset{x}{\underset{+high}{V}} \rightarrow [-syllabic] / ___ V \quad$$

It seems at first sight as though this rule might be combined with PR 1, inasmuch they both turn sequences of two adjacent vowels into one. But there is some reason to view them as distinct processes. According to Tarlinskaya (1973), $i\alpha$ and $u\alpha$ are monosyllabic in Pope in unstressed syllables, as in *pinions* and *usual*, but disyllabic in stressed syllables, as in *idea* or *cruel*. This means that Pope had PR 3 but not PR 1.

The distinction between the prosodic and metrical components is in the first place motivated by the different character of the rules they contain. Metrical rules are unordered conditions on matching, whereas prosodic rules are ordered mutation rules. Metrical rules apply to the basic metrical units (stress trees, in English), whereas prosodic rules apply to phonological representations and have a form and content like that of ordinary phonological rules.

This last point can be further sharpened: Not only are prosodic and phonological rules formally and substantively alike in general, but also the specific prosodic rules of English are evident cognates of existing English phonological rules (cf. PR 1, 2, and 3 as discussed above). (The prosodic rule PR that was required in SSM was not related to any phonological rule of English, and indeed was unlike any real rule of language. This provides another argument for the new theory, in which no such rule is required.)

On the other hand, none of the metrical rules look remotely like any actual linguistic rules of English. Prosodic rules in fact constitute a paralinguistic system that specifies the poetic language as a derivative of the system (not necessarily of the surface representations!) of ordinary language. From this point of view, poetic language is a potentially abstract entity, in that the metrically relevant representations need only have a virtual existence as stages in a grammatical derivation, with no physical realization at all (Kiparsky (1968, 1972)).

It is not only the (formal and substantive) differences between metrical and prosodic rules that lead us to place them in separate components. This step is also required by the way they interact in the system. It will be instructive to work through in detail a few examples of the interaction between the two components that is implicit in our scheme, and to see what would be lost if we tried to collapse them.

The first observation to be made here is that all metrical rules must have access to the output of the prosodic rules. Consider the relationship between (73) and PR 1. (73) restricts lexical S to metrical S position, and so in effect allows weak positions to be occupied by stressed monosyllabic words. But it is not self-evident what a monosyllabic word is for purposes of this rule. PR 1, for example, allows words like *sayer* and *saying*, which are normally disyllabic, to be counted as monosyllabic for metrical purposes (which, let us repeat, in no way means that when scanned as monosyllables, they must be also so recited, though they of course may be). How does this prosodic rule relate to (115)? Can words like *saying* appear in weak position or not? If our theory is right, it should be the case that if the prosodic rules make available to the metrics a monosyllabic representation of *saying*, then *saying* ceases to have a lexical stress and therefore can appear in weak positions. This is indeed the case:

(141) A sooth/*sayer* bids you / beware / the Ides / of March (J.C. 1.2.19)
 Can lay / to bed / for ever; / whiles you, / *doing* thus (Tmp. 2.1.284)

The facts are quite different for resolution, which is a *metrical*, not a prosodic process. A disyllabic word is *not* admitted in weak position by virtue of resolution; we do not find examples like (142) in Shakespeare:

(142) *Fortune/*tellers* bid you / beware / the Ides / of March
 *Can lay / to bed / for ever; / whiles you, / *sitting* thus

For a genuine illustration of this missing case we must go to the looser metrical system of the Jacobean playwrights, which allows violations of (73) (though such lines are rare there too); cf. the line (143) cited from Young (1923):

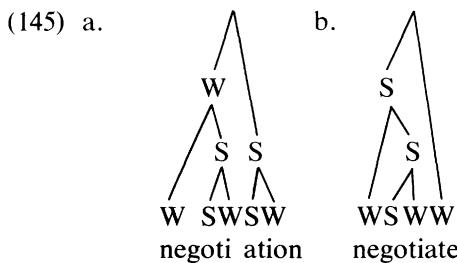
(143) Cover / her face; / mine eyes / dazzle; she / dies young
 (Webster, *Duchess of Malfi*, 4.ii)

The contrast between the metrical (141) and the unmeterical—for Shakespeare and most English poetry—(142)–(143) has an interesting bearing on the formal theory. It shows that no system that has *only* unordered metrical rules can suffice—there must be a component of prosodic rules distinct from the metrical rules. Suppose we eliminated prosodic rules from our system. We would then have to replace PR 1 with a *metrical* rule stating that a metrical position can be filled by two syllables under conditions equivalent to those stated in PR 1. But since metrical rules must be unordered, the metrical rule that allows stressed monosyllables to occupy weak positions would be blind to this new rule and therefore inapplicable, which means that lines like (141) would wrongly be designated as unmeterical.

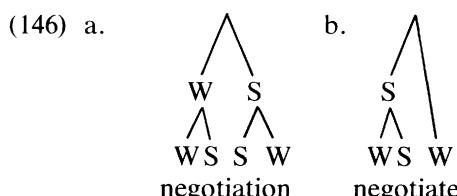
There is actually a somewhat stronger prediction implicit in the framework diagrammed in (4): that the prosodic valuation of a particular metrical position in a given line must be *the same for each metrical rule*. Therefore it could not be the case, for example, that *flier* could be considered as monosyllabic for purposes of determining lexical stress (73) but disyllabic for purposes of the syllable count (115). This means that we not only correctly account for the possibility of lines like (141), but also the obvious impossibility (in traditional metrical usage) of scansions like (144):

w s w s w s
(144) . . . the blind / flier's / descent . . .

A quite different type of interaction between prosody and metrics is illustrated by the following observation. Consider the stress trees of the words *negotiation* and *negotiate*:



The point to note is that the *-ate* of *negotiate* is simply a W (though it is, of course, marked with the segmental feature [+stress]), while the same syllable in *negotiation* is an S, by virtue of being the stronger member of the sequence *-ation* (cf. section 2 above). If we now apply PR 3, we derive the corresponding trees pruned by one branch:



Now we have derived a trisyllabic prosodic variant of *negotiate* that ought to be useful in metrical WSW position, and is:

(147) Let ev/ery eye / negot/iate for / itself (Ado 2.1.178)

But the parallel tetrasyllabic prosodic variant of *negotiation* has two adjacent Ss and should therefore, if our theory is correct, not be able to occur in systems 3 and 4 of (73). And it never does in Shakespeare; the same is true in general for cases where PR 3 would produce adjacent Ss in the stress tree:

(148) a. Oft have / I heard / of *sanc/tua/ry* men
 But *sanc/tua/ry* chil/dren never / till now (R3 3.1.556–557)
 b. Yet such / *exten/uat/ion* let / me beg (1H4 3.2.22)
 c. *Insin/uat/ion*, parl/ey and / base truce (Jn. 5.1.68)
 d. Doth by / their own / *insin/uat/ion* grow (Ham. 5.2.59)

Thus *sanctuary* never occurs in metrical SWS or WSW position, *extenuation* and *insinuation* never in SWSW or WSWS position, and so forth. On the other hand, we find both (149) and (150), with WSW and WSWS scansion, respectively:

(149) a. You may / not so / exten/uate his / offense (M.M. 2.1.27)
 b. We will / exten/uate ra/ther than / enforce (Art. 5.2.125)
 c. Speak of / me as / I am, / nothing / extenuate (Oth. 5.2.342)
(150) a. Which by / no means / we may / exten/uate (M.N.D. 1.1.120)
 b. Her rash / suspect / she doth / exten/uate (Ven. 1010)

It is not necessary to impose any additional conditioning factors on PR 3 in order to explain these restrictions on its operation. Such conditioning factors would be quite complicated, and would moreover in effect duplicate the filtering function that the meter itself will have. We can simply assume that PR 3 applies optionally everywhere. It will effectively be blocked in cases like *extenuation* because its output there has no metrical use in iambic verse.

An interesting question is to what extent different metrical positions in a line may diverge with respect to the application of a prosodic rule. There is no particular reason on our theory to expect any prosodic homogeneity in a line, foot, word, or any other domain of verse. Our theory is compatible with a situation in which an optional prosodic rule is applied in one place in a line and not in another, just as linguistic rules obviously can be so applied.

The fact is that this is not merely a possibility but an actuality, one that poets use with abandon. Shakespeare, especially in the early plays, likes to show off by using the

same word two different ways in one line:¹⁶

(151) a. Poor for/lorn *Pro/teus*, passion/ate *Pro/teus* (T.G.V. 1.2.124)
 b. Who? *Sil/via?* / Aye, *Sil/via*, for / your sake (T.G.V. 4.2.25)
 c. A sec/ond *Dan/iel*, / a *Dan/iel*, Jew (M.V. 4.1.333)
 d. But were I Brutus
 And *Bru/tus An/tony*, / there were / an *Antony* (J.C. 3.2.231)
 e. *Being* had / to tri/umph, *be/ing* lacked / to hope (Son. 52)
 f. Weeds a/mong weeds, / or *flow/ers* / with *flow/ers* gathered (Son. 124)

12. Envoi

We have focused on just one of the problems of metrics, but it is one that must be solved at least partly before much headway can be made on the others. It is the problem of formulating the principles that distinguish metrical from unmetered verse for a given poet or period, and that govern the relative metrical complexity of lines. Taking both metrical form and linguistic stress patterns to be represented by trees with binary branching of each nonterminal node into S(strong) and W(eak), we found that the required principles are best formulated as conditions on the matching of the two tree patterns.

An analysis of Shakespeare's versification from this point of view enabled us to understand many things that were puzzling before, and pointed the way to a whole array of new facts. It also enabled us to get a firm grip on the differences between Shakespeare and other poets, including some that represent what might be called the extreme metrical right and left. Traditionally, such differences have been seen as matters of overall metrical complexity. The contrast between "rough" (or "rugged", "harsh") verse and "smooth" verse (e.g. Donne vs. Waller, R. Browning vs. Tennyson) has long been a staple of metrical theorizing. Frye (1957) draws in effect the same contrast, though he interprets it rather differently. He distinguishes "musical" poets (e.g. Wyatt, Milton, Browning) and unmusical poets (e.g. Spenser, Pope, Keats, Tennyson), on the idea that metrical tension is an artifice essential to music.

These distinctions correspond to specific differences in the metrical theory we have worked out here. The source of “roughness” and “musical” effects are precisely the sorts of labeling and bracketing mismatches we have discussed. However, we can go beyond the traditional intuitions in two respects. First, we can see that the variation within the tradition in fact involves not only overall metrical complexity (“tension”)

¹⁶ Cf. Abbott (1870), Young (1923, 167): "Indeed the use close together of both alternatives seems intentional." The same flourish can be done with metrical rules—cf. for Resolution:

(i) a. Come, *challenge* / me, *challenge* me / by these / deserts (L.L.L. 5.2.815)
 b. *Desolate*, *desolate* will / I hence / and die (R2 1.2.73)
 c. *Imogen*, *Imogen*. Peace, / my lord, / hear, hear (Cym. 5.5.227)
 d. What's *He/cuba* / to him / or he / to *Hecuba* (Ham. 2.2.559)
 e. Was it / his *spirit*, / by *spirit*s taught / to write (Son. 86)

but also clear-cut absolute differences in the specific types of mismatches allowed by the poets. Second, there is far more variety than a simple dichotomy would suggest. A systematic survey of English poetry would show, I think, that no two major poets are quite alike in their metrical rules. After the middle of the 18th century, aspects of the Miltonic and Shakespearean systems are recombined in an endless variety of ways—at first timidly grafted onto a neoclassical base (as still in Wordsworth), then in an increasingly experimental spirit by such poets as Keats, Shelley, Tennyson, Browning, and Hopkins.

The diversity among the classics of English poetry surely exceeds anything to be found within the living literary traditions of, say, Germany or Russia. These stay in a range of metrical complexity that seems tame by comparison. The reason, perhaps, is just a historical one: that Milton and Shakespeare have provided continuing powerful models of great metrical complexity, while the German and Russian classics (e.g. Goethe, Pushkin) appeared only after neoclassical purism had already made its presence felt.

We were able to analyze the diversity without yet losing hold of the core features shared by nearly the entire tradition. Some of the metrical rules, as we saw, appear over and over again. Others vary in form, but even there the variation has nothing arbitrary about it. It is a well-behaved progression along certain linguistic dimensions, notably the hierarchy of stresses, which played a role in many different phases of our analysis.

Finding the common denominator in this diversity was perhaps the central difficulty for traditional metrics. What was one to make of the differences between, say, Milton and Pope? The energy that ought to have gone into working out an empirically and theoretically founded understanding of metrics was largely spent on various bitter semi-ideological controversies about syllabism, accentualism, “musical” scansion, etc. (The early stage of the debate is discussed in Fussell (1954)). They can be seen as efforts (though confused ones) to demonstrate that one or the other metrical usage is in some absolute sense the right one. Studies of the individual characteristics of poets and periods, by contrast, have tended to be deliberately atheoretical—cf. the revealing title of Young’s (1923) useful work—and sometimes even frankly anecdotal, as Saintsbury’s three volumes. So there have really been two independent lines of metrics, each incomplete by itself: theories without data, never really doing justice to the extensive but systematic diversity within the tradition; and data without theory, unable to find the shared foundation of all English metrics. Had they connected properly, many of the odd but traumatic controversies that have periodically shaken the field of metrics would have been unnecessary.

The fact that Liberman’s representation of stress is convincingly superior to the traditional numerical representation as a basis for metrical analysis would strongly support it even were there not good language-internal reasons to prefer it to the conventional representation. It seems clear now that traditional poetics underestimated

the formal richness of meter rather like (and perhaps in part because) traditional linguistics underestimated the formal richness of grammar. Just the linguistics that we already can show to be implicit in the process of composing a line of blank verse would fill volumes if made explicit. And there is no reason to believe that we have penetrated much below the surface as yet. On the contrary, since virtually every major advance in linguistics has so far brought new insight into poetic form in its wake, and what remains to be learned about language far exceeds what we know, chances are that most of metrics still lies in the future.

Suppose then that something like the above analysis is worked out properly, with the gaps filled in and the bugs taken out. What next? A question that I have been able to say nothing about here, though I hope that this work will eventually contribute towards answering it, is: What is the function of rhythm in poetry? What esthetic ends are served by the formal patterns that I have tried to uncover here? And second, we have to ask *why* the metrical rules work as they do. To take an example at random: why are extrametrical syllables allowed at constituent boundaries, rather than in the middle, or just at one end? Why, indeed, are they allowed at all? No doubt the formal organization of meter is determined in a complex way by the interacting demands of esthetic function and linguistic form. But how?

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