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STRESS, SYNTAX, AND METER

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The way stress is patterned in English verse depends on word and phrase structure, according to strict rules which are not accounted for by either traditional or more recent metrics. This paper is a contribution to the exploration of these rules, and an attempt to develop a formal metrical theory capable of expressing them. The presentation is organized as follows. After an introductory review of some of the problems and proposed solutions in metrics, I give (§1) a sketch of the theory to be defended here. §2 is devoted to justifying this theory on the basis of a fairly close examination of Shakespeare's verse. Then the scope of the investigation is extended in several directions: to other varieties of iambic pentameter (§§3.1–2), trochaic meter (§3.3), ternary meters (§3.4), and finally (§3.5) to some similarities and differences between the metrics of English and other languages, on which the present approach sheds new light.*

Most theories of English metrics consider verse simply from the phonological side, as arrangements of syllables with varying degrees of stress, possibly with certain intervening pauses. They differ among themselves mainly in how they tackle the problem of reducing the huge variety of stress patterns in English to the relatively few and simple meters that they manifest.

Traditionally, English verse is analysed by dividing it into feet and classifying the feet into types called 'trochees', 'iambs', 'spondees' etc., where each of these types represents some arrangement of the two basic elements 'stressed syllable' and 'unstressed syllable'. This is not so illuminating as the corresponding approach in Greek or Latin. In those languages, the basis of versification is the distinction between long and short syllables, which really IS binary—so that there are, e.g., only four possible types of two-syllable feet, and terms like 'trochee' have a well-defined meaning. But more than two degrees of stress are demonstrably significant in English verse. As a result, the traditional approach is incapable of making the necessary basic distinctions. For example, is $midnight$ a spondee or a trochee? Both interpretations can be encountered in the scansions of the metrical literature. But neither is adequate, for the fact is that a word with this stress pattern behaves quite differently from either clear spondees like $dark\ night$ or clear trochees like $rabbit$ (see below, §§2.1–3). For such reasons, a theory modeled directly on the metrics of classical languages cannot even get off the ground in English.

I do not mean to deny that the venerable classification of feet into trochees, iambs etc. can be useful for certain purposes. My objections are rather that it is not well-defined for English speech rhythms; and that it would not, even if made precise, be a fine enough classification of them for metrical purposes. In this essay, I shall mainly use the traditional terms to classify the underlying metrical patterns

in the usual way (as in the terms 'iambic pentameter', 'trochaic verse'), for which they are entirely adequate. When no confusion can result, I shall also sometimes speak loosely of 'trochaic feet' and the like, in reference to particular pieces of verse.

It is in part the recognition of these shortcomings which has given rise to the tradition of 'musical' scansion (Lanier 1880) and the application of Trager–Smith or other multiple-stress systems to English metrics (Whitehall 1956, Chatman 1965). Both approaches provide notations for representing metrical structure in a way which begins to do justice to the actual rhythm of language. They have led to discerning analyses of particular poems (e.g. Frye 1957, Chatman 1956). For the most part, however, they have remained nothing more than methods of transcription. Only rarely have they been used as the basis of theories of meter that give some general account of the principles of versification. Even if we assume just two levels of stress, there are several hundred arrangements of stressed and unstressed syllables that are ordinarily encountered as instances of the iambic pentameter verse type, and also several hundred arrangements of the same length which are not. If we recognize, as we must, at least four metrically relevant degrees of stress, the figures on each side run in the hundreds of thousands. Nobody could possibly learn the distinction between metrical and unmetrical lines by memorizing the actual patterns; rather, one acquires a 'feel' for the verse in terms of some general principles. The initial task of metrical theory is just to discover these principles in particular metrical systems; at a deeper level, we can then proceed to try to explain them, and ultimately to develop a general theory of meter. But even the beginnings of this program have seldom been attempted until recently.

Among the rare exceptions in the earlier literature on metrics is Jespersen 1933, which proposed a metrical theory that takes into account the phonetic realities of English stress, but without giving up the traditional goal of discovering the principles that differentiate metrical from unmetrical verse. This project requires some new handle on the problem of stating metrical constraints. The old approach of classifying the feet and specifying their permissible combinations is not likely to work—since, with a more elaborate stress system, the number of foot types grows unmanageable (in a four-level stress system, there are sixteen possible types of disyllabic feet alone). Jespersen ingeniously tried to solve the problem by taking stress values not in absolute terms, but relative to their context: 'The pattern expected by the hearer is a sequence of ten syllables (which may be followed by an eleventh, weak syllable), arranged in such a way that the syllables occupying the even places are raised by their force above the surrounding syllables' ([1900] 1962:653); 'the only thing required by the ear is an upward and a downward movement, a rise and a fall, an ascent and a descent, at fixed places, whereas it is of no importance whatever how great is the ascent or the descent' (1962:654). The basic requirement, then, is to minimize 'disappointing' transitions in a line. The attractive feature of this approach is that it explains why inversion is most common after a pause: 'Here the ear is not disappointed in the first syllable: after the pause preceding the line, one does not know what general level to expect' (1962:655).

It is doubtful whether the distinction between metrical and unmetrical lines can

be drawn simply in terms of the number of 'disappointments' (and Jespersen in fact did not try to do so). Thus his example

(1) Never came poyson from so sweet a place

has two 'disappointments': a fall in the second syllable in place of the expected rise, and a rise in the third syllable instead of the expected fall—still, it is perfectly metrical. But the construct

(2) *For when came poison from so sweet flowers?

has two 'disappointments', and is unmetrical (for the basis of this unmetricality, see §2.3 below). Thus Jespersen's concept does not by itself constitute or directly lead to a metrical theory. At best, it could form an element of some metrical theory; but I shall argue below that even this is not the case.

Halle & Keyser (1966, 1971a,b) have raised the discussion to a new level by formulating a theory precise enough to make clear immediately what sort of evidence is required for its support or refutation. Their theory is also based on relative stress values; but, unlike Jespersen, they take the value of a stress to be determined by both its right and left context. They set up the abstract metrical pattern as an alternating sequence of weak and strong positions, and define a STRESS MAXIMUM as 'a fully stressed syllable [that] occurs between two unstressed syllables in the same syntactic constituent within a line of verse' (1971a:169). They then propose, as the basic principle of English meters, the 'realization rule' that STRESS MAXIMA CAN OCCUR ONLY IN STRONG POSITIONS. I shall refer to this as the STRESS MAXIMUM PRINCIPLE.

Among the lines that are allowed as metrical by the Stress Maximum Principle, Halle & Keyser further establish a hierarchy of metrical complexity that provides a formal reconstruction of what is sometimes referred to as the 'tension' created by the 'allowable deviations' of linguistic rhythm from the underlying meter. Although their specific solution cannot be made to work, their idea of a hierarchy of complexity is an important advance, which I shall adopt in my own proposal below.

In some respects, however, the Halle–Keyser theory is a step backward. Their first formulation (1966) was based on the generally recognized phonetic representation of English stress as a system with multiple levels. But this resulted in so many exceptions to the Stress Maximum Principle that they were forced to revise their theory (1971a,b)—so that, in effect, it treats stress as a binary feature. In their new version, the greatest non-zero stress in each word (including members of compounds) counts as stressed for purposes of the Stress Maximum Principle, and everything else counts as unstressed. But by their definition, a stress maximum has an unstressed syllable on its right and left; it therefore follows that their theory cannot even distinguish, e.g., between the phrasal and compound stress patterns, though these are not treated at all alike in English versification. By this revision, Halle & Keyser have really returned to the binary system of stress that underlies Latin-style English metrics—and with it, to many of the inherent difficulties of that approach. We shall see (in §2.3) that certain types of metrical lines cannot be accommodated by any possible version of the Stress Maximum Principle. Its chief

failing, however, as several critics have already pointed out, is that it is far too weak, and fails to rule out much that never occurs in actual poetry.

The traditional approach, as well as the new departures of Jespersen and of Halle–Keyser, are based on the assumption that meter regulates just the phonological shape of verse. This mistake is, in my judgment, the main reason for the unsatisfactory state of the field. The most important, virtually unbreakable constraints on meter in English involve the grammatical structure of the verse, notably the phrase and word units of which it is made up.

The great merit of the metrical theory proposed by Magnuson & Ryder (1970, 1971) is to have recognized some of the role that word structure plays in meter. Their rules reflect several correct observations about the different treatment of monosyllabic and polysyllabic words. However, their observations are not general enough; consequently their metrical rules remain ad-hoc, and do not lead to any explanations.

What is more, the Magnuson–Ryder rules must be rejected simply because they rest on incorrect assumptions about the facts. Great quantities of counter-examples to them have been adduced by Halle & Keyser 1971b, to which Magnuson & Ryder have responded with a curious willingness to brand a significant part of English poetry as unmetrical. This is as if a grammarian should decide to reject an equivalent portion of English prose as ungrammatical. The analogy can be developed further: The two sources of ungrammaticality in written texts are slips of the pen, which are obviously rare in literary writing, and deliberate breaches of grammar, which always have some special expressive purpose. The situation is similar in metrics. A sound working assumption would be that a line can be taken as unmetrical only if it can plausibly be defined as either a slip or an intentional, expressive violation of meter.[1] On this view, large numbers of random metrical exceptions do not occur, except possibly in hurried compositions of inexperienced poets. In particular, they do not occur in 'experimental' poetry. Deviations in such work are always either functionally motivated breaches of the system, or else are regular within a new, less restricted system set up by the poet (though even then, part of their effect might of course be caused by the contrast with the old system). If this is correct, then students of metrics, when faced with exceptions, must either explain them or change their rules. They should neither rest their case and blame the poet, nor rest their case and challenge others to come up with a 'better theory'. In particular, since the wholesale unmetricality that Magnuson & Ryder impute to Shakespeare is too random to be expressive and too frequent to be accidental, we can only conclude that their metrical rules are incorrect.

The inordinate complexity of the Magnuson–Ryder rules is in part the result of their failure to draw the right distinction between phonology and metrics: their rules include a good bit of information that simply duplicates what is already given by the stress rules of the language. For example, they carefully specify the distinction between lexical and non-lexical categories in their metrical rules; but the

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[1] As in Pope's line discussed in §3.1 below (ex. 67), or that of Keats cited by Halle and Keyser 1971a.

metrical difference between them simply follows from the different stress assigned
to them by English grammar: you do not have to be a poet to know that *boy*,
but not *the*, has stress. That fact need not be included in a theory of English
metrics, but can be presupposed by it. The consequences of failing to separate
metrics and grammar go beyond mere redundancy. More seriously, they obscure
the deep similarities between the metrical systems of languages with different
phonological systems (see §3.5 below), and thus makes the general principles of
metrical systems difficult, if not impossible, to discover.

The recent controversy—involving the Halle–Keyser theory, Beaver's modifica-
tion of it (1971a), and the Magnuson–Ryder counter-proposal—has so far been
inconclusive. At any rate, apparently none of the participants has succeeded in
convincing any of the others. In the last round of debate (Halle & Keyser 1971b,
Magnuson & Ryder 1971, Beaver 1971b), each of the contending views met with
some strong criticism from the opposition; but the rejoinders, insofar as any
were made, seemed generally unconvincing. As things now stand, both the Halle–
Keyser theory (with or without Beaver's emendation) and the Magnuson–Ryder
theory plainly have serious flaws. But there certainly is nothing to recommend a
return to the combination of vague generalizations and aimless cataloguing of
facts that was characteristic of traditional metrics. Rather, I shall try to build on
the progress already achieved by formal methods in metrics. In order to do justice
to the facts, however, a new theoretical approach will be required.

1. A THEORY OF ENGLISH METRICS. On one traditional view, which I follow here,
METER is a system of correspondences between musical and linguistic rhythm.
Specifically, in line with the approach to poetic form sketched in Kiparsky 1973,
I take a metrical system to be characterized by four components:

(A) An inventory of BASIC PATTERNS, each of which is some regular arrangement
of a small number of phonological units. In English verse, these units are stressed
and unstressed syllables. The basic pattern of the iambic pentameter, for example,
is a sequence of ten alternatingly unstressed and stressed syllables. Thus the basic
pattern characterizes the musical rhythm that underlies verse.

(B) A set of METRICAL RULES, which take as input the basic patterns in the in-
ventory, and generate a set of derived metrical patterns. Like the basic patterns,
the derived patterns are sequences of phonological units, e.g. sequences of stressed
and unstressed syllables. The derived patterns correspond to the natural rhythm
of speech: thus, in English, a line is metrical if the stress pattern assigned to it by
the normal stress rules of the language corresponds to a derived metrical pattern.

(C) An index of METRICAL TENSION, which defines RELATIVE metrical constraints
that correspond to what is sometimes referred to as the TENSION between the ab-
stract metrical pattern and the actual rhythm of verse, and to what Halle & Keyser
term metrical COMPLEXITY. The index of metrical tension sets up a stylistic hierarchy
among metrical lines which can also, in statistical terms, differentiate between
periods or types of verse (see §§3.1–2 below).

(D) A set of PROSODIC RULES, which specify HOW the derived patterns generated
by the metrical rules are to be matched up with linguistic representations. This
matching is not necessarily uniquely determined; hence it is necessary to state

specifically what, for metrical purposes, counts as a 'stress', what counts as a 'syllable', and so on. In so delimiting prosody from metrics, I follow usage which is well established in classical philology (Maas 1962).

1.1. In order to state our metrical rules, we need certain linguistic prerequisites. The sentences of a language are made up of WORDS, and of larger units called PHRASES. Both terms have somewhat vague meanings in ordinary usage; for our purposes we require precise definitions which pick out exactly the right linguistic units. The definitions supplied by the theory of transformational grammar turn out to meet our needs well.

The formalization of the concept 'word' has been worked out in Chomsky & Halle 1968 (§6.2), and in more detail in Selkirk 1972 (Chapter 1). It involves two rules:

WORD BOUNDARY RULE 1 (WBR 1): The boundary # is automatically inserted at the beginning and end of every string dominated by a major category, i.e., by one of the lexical categories 'noun', 'verb', 'adjective', or by a category such as 'sentence', 'noun phrase', 'verb phrase', which dominates a lexical category (Chomsky & Halle, 366).

WORD BOUNDARY RULE 2 (WBR 2): In a sequence $W\#]_X \#]_Y Z$ or $W_X[\# _X[\#Z$, where $Y \neq S'$ [S' = the initial symbol of the grammar; I shall simply use S here—P.K.], delete the 'inner' word boundary (Selkirk, 12).

In the sentence *His friend raises sheep*, WBR 1 will give

(3) $_S[\# _{NP}[\#His _N[\#friend\#]_N \#]_{NP} _{VP}[\# _V[\#raises\#]_V _{NP}[\# _N[\#sheep\#]_N \#]_{NP} \#]_{VP} \#]_S$

Applying WBR 2 to eliminate superfluous # boundaries, we get the following representation (given without brackets):

(4) ##His#friend##raises##sheep##

In general, members of lexical categories—nouns (including members of compounds), adjectives, verbs, and adverbs—will be surrounded by double word boundaries (##___##) in the resulting surface structure; members of non-lexical categories (such as *his, the, and, with*) will be separated from the word or phrase with which they are in construction (usually on their right) by a single # boundary. This has interesting consequences for metrics, as we shall see below (§2.5).

The division of sentences into phrases is also given by the surface syntactic structure. A phrase is everything that is dominated by one of the categories Noun Phrase, Verb Phrase, Adjective Phrase, or Prepositional Phrase. Thus the location of phrase boundaries can be identified in surface structure by the occurrence of brackets labeled P ($_P[$), where P is one of the above categories.

This syntactic phrasing appears to determine, by principles which are only partially understood, the phonological phrasing of sentences, i.e. the locations of optional or obligatory intonation breaks, corresponding to caesuras in verse. It appears, as a first approximation, that intonation breaks are possible at all phrase boundaries which coincide with ##, viz. at $\#]_P[\#$ and at $_S[\# _P[\#$. In what follows, I shall use $\# _P[\#$ to denote both cases. For example, in the sentence *John sat with the old man*,

(5) $_S[\# _{NP}[_N[John]_N \#]_{NP} _{VP}[\# _V[sat\#]_V _{PP}[\# [with] _{NP}[\# [the] _A[\#old\#]_A _N[\#man]_N]_{NP} \#]_{PP}$
    $\#]_{VP} \#]_S$

a break can be made between *John* and *sat*, and between *sat* and *with*. But there can be no break between *with* and *the*, or between *old* and *man*, neither of which is separated by $\#_P[\#$. I shall refer to an unstressed word which cannot be followed by a break as a PROCLITIC, and to an unstressed word which cannot be preceded by a break as an ENCLITIC. The part of a sentence between two (potential or actual) breaks is termed a (potential or actual) PHONOLOGICAL PHRASE. Intonation breaks are of course obligatory between sentences. They are also obligatory (except in fast speech) at certain kinds of clause boundaries, which correspond to orthographical commas. I shall proceed on the assumption that versification is based on the actualization of optional intonation breaks—i.e., that sentences are divided into phonological phrases wherever possible. However, this does not mean that the same breaks must necessarily be pronounced in recitation (see below for further discussion).

The occurrence of $\#_P[\#$ is a sufficient condition for the occurrence of a potential break, with the proviso that the potential breaks are unlikely to be pronounced if the resulting phonological phrases are very short. Especially under conditions of hesitation or emphasis, breaks are also possible elsewhere in a sentence, e.g. *John is—a* LIAR! or *John is a—*LIAR! To what extent this happens, apart from such special conditions, is unclear.

I shall operate with four degrees of stress, as in many phonetic and 'phonemic' transcriptions (e.g. the Trager–Smith system, Jespersen). These can be obtained from the output of the Chomsky–Halle stress rules by identifying everything of degree four or less as a single weakest level. There is nothing magic about that number; the reason for ignoring stresses of degree four or weaker here is simply that I have not found them to have any metrical relevance. If it turns out that the facts after all warrant it, a lower cut-off point can easily be introduced. The system given below can operate equally well with finer gradations of weak stresses; nothing in its structure depends on there being only four.

I represent degrees of stress by numbers in the currently usual way, with 1 standing for the highest degree of stress ('primary' stress). For convenience, I represent the lowest degree as 4 rather than 0, e.g. $\overset{4}{a}\overset{2}{lert}$ $\overset{1}{li}\overset{3}{feguard}$. Furthermore, I assume that only the greatest stress in each word (i.e. in each domain $\#\#\_\_\#\#$) is metrically relevant; i.e., the fact that the first and last syllable of *pentameter* are slightly more stressed than the third appears to be of no metrical relevance—it only matters that the second has primary stress, and the others are unstressed for purposes of metrics. Otherwise, the representation of stress can be taken to be the normal output of the stress rules, including the Nuclear Stress Rule, which subordinates the stresses of the non-final members of a constituent to its final member (e.g. $\overset{2}{long}$ $\overset{1}{night}$). The Nuclear Stress Rule operates within phonological phrases. By the above-mentioned working assumption that versification is based on the maximal division into phonological phrases, the Nuclear Stress Rule will not operate at the sentence level, since a sentence in poetry will consist of at least two phonological phrases (unless the subject is a pronoun, in which case the Nuclear Stress Rule applies vacuously at the sentence level): thus the subject Noun Phrase will not be subordinated to the predicate Verb Phrase in stress. The metrical facts show (§2.1, end) that at least

this much stress subordination is metrically relevant; they are consistent with, but do not positively support, the possibility that there is stress subordination in larger domains, such as the sentence (as assumed by Beaver 1971a) or the line. If this should prove to be the case after all, our assumption about phrasing would have to be revised.

1.2. The METRICAL RULES constitute a bridge between the rhythm of music and speech, operating on the units which make up the basic metrical patterns. In English, these units are syllables with either stress ([1 stress]) or no stress ([4 stress]). Metrical rules have the form

(6) A → B in env. C____ D

which may be read 'A is replaced by B in the environment after C and before D'. In such a rule, A and B may be any single unit, or zero; C and D are sequences of units and/or boundary markers. Metrical rules may be optional or obligatory; all those that we shall encounter here are optional, and we shall not specifically re-iterate this for each rule below.

Examples of metrical rules that insert or delete units (i.e. rules where A or B are zero) are the rules that account for headless lines and extrametrical syllables. These rules will be discussed in §2.7.

Stress in English verse is governed by the following metrical rules:

METRICAL RULE 1 (MR1): [1 stress] → [α stress]
METRICAL RULE 2 (MR2):

$$[4 \text{ stress}] \rightarrow [\beta \text{ stress}] \text{ in env. } \begin{cases} \# \text{\_\_\_} \# & \text{(a)} \\ \# \text{ }_\text{P}[\# \text{\_\_\_} & \text{(b)} \end{cases}$$

Here α, β are variables ranging over the relevant values of stress (1 through 4, in the present system). MR1 says that a primary stress can be freely replaced by any other stress. That is, strong positions are not constrained categorically, though they are constrained relatively, by the metrical tension index. MR2 says that, in place of no stress, we can have a stress under two conditions: in a monosyllabic word (condition a), and after an intonation break (condition b). Thus weak positions are constrained in two ways: categorically, by conditions (a) and (b), and relatively, by the metrical tension index. The former distinguishes metrical from unmetrical lines; the latter establishes the hierarchy of complexity among metrical lines.

1.3. METRICAL TENSION can be construed as the degree of difference between underlying and derived metrical patterns. Since both are expressed as sequences of stresses, we can quantify the tension by totaling the difference between the under-lying and derived values for each metrical position:

> INDEX OF METRICAL TENSION: The metrical tension between a derived metrical pattern $\phi_1, \ldots \phi_n$ and an underlying metrical pattern $\psi_1, \ldots \psi_n$ is the sum of differences between each ϕ_i and ψ_i.

Since we are assuming that stress ranges over the values 1, 2, 3, 4(=0), where only 1 and 4 appear in the underlying pattern, the tension in each metrical position may have a value from 0 to 3, and the tension of a ten-syllable line varies from 0

to a theoretical maximum of 30. In practice this maximum is hardly ever reached; one example is Lear's dying

(7) Never, never, never, never, never.

Normally, a tension of about 15 already makes the underlying pattern hard to grasp, and approaches the upper limit of tolerable metrical complexity in English poetry.[2]

Other than this, there is no ABSOLUTE meaning to the values of our tension index: they have only a RELATIVE meaning in comparing different lines or poems for metrical complexity, or in comparing different metrical utilizations of a word or phrase.

This tension index is of course no a-priori construct, but must be justified empirically as corresponding to some real hierarchy of metrical complexity.[3] I shall attempt to do so by showing that relative tension, as here defined, corresponds to relative frequency in poetic usage and to evident stylistic differences, both over-all between periods and within single works.

1.4. The PROSODIC RULES which interest us here are primarily those governing the metrical utilization of stress in English. Thus, as we have noted, subsidiary

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[2] Thus there are lines which are metrical, but unacceptable because of their complexity. This is no different from the fact that there are sentences which are grammatical, but unacceptable for a variety of stylistic reasons, including syntactic complexity. The limits of complexity vary with style and period.

Note that even lines with zero tension need not be doggerel; considerable variety of rhythm can still be introduced by syntactic means, e.g.:

... By the fire
That quickens Nilus' slime, I go from hence
Thy soldier, servant, making peace or war
As thou affect'st.   (Ant. 1.3.68–71)

All examples here, unless otherwise indicated, are from Shakespeare (with titles abbreviated in the style of the *Shakespeare Quarterly*).

[3] The tension index is here defined only for lines that preserve the underlying number of syllables in the derived pattern. Presumably, the application of the metrical rules that create extrametrical syllables or headless lines gives an additional boost to the metrical tension of a line. But in the absence of clear facts about the stylistic function of these processes, assigning a definitive quantitative value to their operation would be mere numerology. There is also the question whether the prosodic component makes a contribution to the tension index. For example, when two syllables fill a single metrical position, does this increase the complexity of a line? Some observations of Sipe 1968 suggest a way in which this question might be answered. She finds that Shakespeare systematically uses lexical doublets of different syllabic value (such as *gainst* and *against*, *get* and *beget*) to impose a decasyllabic iambic pattern on his verse. However, there is no apparent effort to minimize synaloepha by these means. It could easily have been avoided in lines such as

To *emblaze* the Honor that thy Master got   (2H6 4.10.76)
To *enforce* the painèd impotent to smile   (LLL 5.2.864)

by replacing *emblaze*, *enforce* by *blaze*, *force* (elsewhere used by Shakespeare in the same meanings). The fact that the disyllabic form of the verb could be used in such cases shows that synaloepha, whether or not it corresponded to a real phonetic elision, was at any rate not viewed as a desperate last resort. Perhaps a thorough comparison of the possibilities with Shakespeare's actual practice will tell us to what extent synaloepha was stylistically marked.

stresses within words are not metrically relevant. Formally, this fact corresponds to the following rule:

> PROSODIC RULE (PR): Disregard all but the strongest stress in each domain ## X ##, where X does not contain ##.

Other prosodic rules deal with the matching of metrical positions to syllables. They must provide, e.g., that words like *being*, *prism*, *heaven* may each fill either one or two positions in most kinds of English verse; *Antonio*, *circumference* may fill either three or four; and so on.[4] In general, prosodic rules can be viewed as a kind of parasystem of phonology, a modification for poetic use of the regular phonological system of the language. The principal ways of modification are the disregarding of certain phonological rules and the addition of others: thus, *prism* is morphophonemically monosyllabic but phonetically disyllabic, by virtue of a rule which makes its nasal syllabic between a consonant and a word boundary (compare *prismatic*, where this rule cannot apply). To scan it as a monosyllable involves disregarding the operation of this rule. On the other hand, a word like *pitiful* is trisyllabic, both morphophonemically and in actual pronunciation; if we find Shakespeare scanning it as disyllabic, we should ascribe that fact to a prosodic convention that allows two syllables to be counted as one under certain conditions. In neither case does this necessarily mean that the actual pronunciation ever followed the scansion; it is unlikely that *prism* would ever have been pronounced as a monosyllable, or that *pitiful* would ever have been pronounced as a disyllable. Similarly, the stresses which PR tells us to disregard are not omitted in the actual recitation of verse.

I shall, throughout this paper, maintain the sharp distinction between the metrical organization of a poem and the way it is recited (see Jakobson 1960, Halle & Keyser 1966, 1974 for discussion of this distinction). The confusion between them is, however, endemic to the metrical study of stress-based verse. Unlike syllabic quantity, stress—and especially sentence stress—is highly variable in speech. Stress-based verse can therefore be recited in many ways. At one extreme, it can be recited 'as if it were prose', according to the natural rhythm of speech. In terms of our theory, this kind of recitation actualizes solely the derived metrical pattern: an example is Robert Frost's reading of his own poetry in his well-known recording. The other extreme is the 'schoolboy' manner of imposing a mechanical alternating rhythm on the verse, i.e. reciting according to the underlying metrical pattern: this is said to have been the prevalent manner of reciting poetry in the 18th century. Between these extremes (which, perhaps, are never found in absolutely pure form) are various compromises between the two levels of rhythm. In these compromises, the rhythm of recitation is 'tilted' (to use the term of Wimsatt 1970) from the derived pattern toward the underlying pattern. Chatman's analysis of recorded recitations (1965) shows that such 'tilting' is common where it involves relatively small changes in stress, as in 'spondaic' and 'pyrrhic' feet.
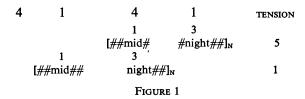
In no way does this mean that meter and recitation are to be identified. On the contrary, the very notion of 'tilting' implies that something (the natural speech

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[4] A recent detailed study of the evolution of these prosodic conventions in English poetry is Tarlinskaya 1973.

rhythm, corresponding to the derived mechanical pattern) is being changed toward something else (the musical rhythm, corresponding to the underlying metrical pattern). The question 'What is the relationship between these two levels of rhythm?' is not the same as, and indeed is presupposed by, the question 'Where, between these levels, is the rhythm of recitation determined?' Suppose, for the sake of argument, that poetry were always recited in the 'schoolboy' manner. The recitation of verse would always coincide with the underlying metrical pattern, and the derived metrical pattern would never be heard. Would this do away with the need for metrics? Of course not. The question of what is a metrical line would remain: it would now be the question of what can and what cannot be 'tilted' into an iambic pattern. To answer it, we should still need metrical rules to map out a relation between two levels of rhythm. (If we like, we could think of the arrow in the metrical rules as going in the other direction, with the speech rhythms now 'changing into' the musical iambic rhythm—so long as we realize that the rules are still the same, and that the direction of the arrow is nothing more than a meta-phorical way of visualizing the conventions of recitation.)

But to say that meter and recitation are distinct is NOT to say that they are unrelated. It is quite possible that prevailing conventions of recitation may be connected in interesting ways with metrical rules and their utilization. For example, the strictness of neo-classical versification could have something to do with the custom at that period of reciting verse largely in accordance with the underlying pattern. The reader can easily convince himself that such recitation sounds much worse for Shakespeare and Donne, because of their higher level of metrical tension, than it does for Dryden and Pope. Thus we may speculate that the neo-classical style of recitation requires neo-classical metrical practice, and that neo-classical metrical practice in turn invites the neo-classical style of recitation.

2.1. METRICAL TENSION: COMPOUNDS VS. PHRASES. Disyllabic compounds like *midnight* have a 1–3 stress pattern. Since the members of compounds are them-selves words, MR2a is applicable to them, and allows both the first and the second member of a compound to occur in weak position. There is, however, a great differ-ence in the metrical tension that results from these two possible metrical uses of disyllabic compounds, as is evident from the schema in Figure 1.

4	1	4	1	TENSION
		1	3	
		[##mid#	#night##]$_N$	5
	1	3		
	[##mid##	night##]$_N$		1

FIGURE 1

A compound in strong–weak (even–odd) position produces the near-minimum tension of 1, whereas a compound in weak–strong (odd–even) position produces the near-maximum of 5. Accordingly, the system predicts that compounds should occur in both positions, but that strong–weak positioning should be much more frequent than weak–strong positioning in iambic verse.

This matches the facts of metrical usage exactly. The favored position of di-syllabic compounds is, of course, beginning at an even syllable. It is not necessary to give many examples of this normal case:

(8) With Ap/ril's *first-*/*born* flowers, / and all / things rare (Son. 21)
And art / made *tongue-*/*tied* by / author/ity (Son. 66)
When *proud-*/*pied* Ap/ril, dressed / in all / his trim (Son. 98)

And disyllabic compounds do occur also in odd–even position. This usage is much less frequent, as predicted by our theory, but is sufficiently well attested that there can be no doubt about its metrical status:

(9) As the *death-bed* whereon it must expire (Son. 73)
Anon he rears *upright*, curvets, and leaps (Ven. 279)
Grew I not faint? And fell I not *down-right*? (Ven. 645)
Like a *milch doe*, whose swelling dugs do ache (Ven. 875)
The dove sleeps fast that this *night-owl* will catch (Luc. 360)
With the *love juice*, as I did bid thee do? (MND 3.2.37)
Between our after-supper and *bedtime* (MND 5.1.34)
In the *line-grove* which weather-fends your cell (Tmp. 5.1.10)
In my *school-days* when I had lost one shaft (MV 1.1.140)
Yond light is not *daylight*, I know it, I (Rom. 3.5.12)
Or I'll be buried in the King's *highway* (R2 3.3.155)
Do wound the bark, the skin of our *fruit-trees* (R2 3.4.58)

The odd–even positioning of disyllabic compounds remains a possibility through-out English iambic verse:

(10) Of fruits, and flowers, and bunches of *knot-grass*
(Keats, Eve of St. Agnes, st. 24)
Half-hidden, like a mermaid in *sea-weed* (Ibid., st. 26)
Some boy too far from town to learn *baseball* (Frost, Birches)
I'd like to go by climbing a *birch-tree* (Ibid.)

Even as strict a versifier as Pope allows it (see §3.1 below).

Our theory, then accounts for both facts: the occurrence of both strong–weak and weak–strong positioning, and the great predominance of the former. How does the Halle–Keyser theory fare in this respect? The prediction which the Stress Maximum Principle makes about disyllabic compounds depends on how their stress pattern is analysed prosodically. There are two possible alternatives to con-sider. The first is that the tertiary stress of the second member is not counted as a stress in prosody: in that case, *blackbird* is trochaic, and should pattern like non-compounded disyllables with initial stress. But then the Halle–Keyser theory could not account for the metrical type of 9, as opposed to the non-occurring type

(11) *As the *pallet* whereon it must expire

Indeed, on this assumption, the type of 9, with a compound in odd–even position, would become a counter-example to the Stress Maximum Principle—since *death* etc. are stressed syllables in weak position between two unstressed syllables.

The second alternative, which Halle & Keyser (1971:171) opt for, is that

(12) [in the *blackbird* type] 'both stresses would count metrically since both
stresses are the full stresses within their respective words, namely *black*
and *bird*.'

But first of all, assumption 12 leads to an insoluble contradiction within the
Halle–Keyser system. They allow (1971a) for a line to contain one or two extra-
metrical syllables,[5] which must be unstressed. And it is quite true that there are no
extrametrical syllables with primary stress. However, second members of com-
pounds can occur as extrametrical syllables:

(13) Like to a chaos, or an unlicked bear*whelp*   (3H6 3.2.161)
Quite overcanopied with luscious wood*bine*   (MND 2.2.251)
Which daily grew to quarrel and to blood*shed*   (1H4 4.5.195)
The lamps of night in revel, is not more man*like*   (Ant. 1.4.5)
Take heed of perjury, thou art on thy death*bed*   (Oth. 5.2.51)

Since Halle & Keyser take second members of compounds to be stressed, their
theory is unable to distinguish the metrical examples of 13 from the unmetrical

(14) *Quite overcanopied with luscious green *vines*.

The rule is that an extrametrical syllable must have a weaker than primary stress.
No system that equates the tertiary stress of compounds with primary stress can
state this rule.

Prosodic convention 12 also leaves us with no way of accounting for the asym-
metry in the positioning of compounds. It admits the lines in 9 as metrical, but at
the price of destroying the whole basis for explaining why that type is vastly out-
numbered by the type of 8. On the hypothesis that compounds simply have the
prosodic value of two stressed syllables, we should expect them to occur with
similar frequency in both strong–weak and weak–strong position, instead of being
overwhelmingly preferred in strong–weak position.

Another patently false consequence of 12 is that strings of disyllabic compounds
should be equally well analysable as trochaic or iambic. But clearly the natural
scansion of 15 is trochaic:[6]

(15) Blackbird, peacock, bullfinch, titmouse, nighthawk

To summarize, the Halle–Keyser theory cannot explain the metrical behavior
of disyllabic compounds, no matter which of the two possible prosodic valuations
of the compound stress pattern they choose. The root of their problem is the
impoverished prosodic basis of their system, which in essence operates with only
two degrees of stress.

Concerning the Magnuson–Ryder (1971) rules, it is sufficient to note that they
are inconsistent with the facts about disyllabic compounds. Most of the lines in 9

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[5] Actually, two extrametrical syllables are generally adjacent vowels or other sequences
which the prosodic rules must in any case permit to occupy a single metrical position (Bridges
1921:5–6). If this is always true, then only one extrametrical position need be allowed—indeed,
more than one cannot be allowed.

[6] Strictly speaking, an iambic analysis is possible, as in Lear's line quoted as ex. 7 above.
But with a tension index of 25, its complexity under that scansion goes well past what is
normally found in iambic verse.

would be unmetrical by their 'Base Rule 1'. This is not due to an accidental misformulation, but to an error of fact, since they explicitly state that a (constructed) line

(16) *Making driftwood more blest than living lips

is unmetrical (because of the second foot). In reality, lines of that type do occur:

(17) Hear a foot-fall: we are now near his cell   (Tmp. 4.1.195)

We may now compare the patterning of compounds with that of phrases. How should a phrase such as *long night* behave according to our system? The prediction we make is that both positionings ought to be metrical (though putting the more strongly stressed head in strong position should give a lesser degree of metrical tension), while the difference between the two positionings is not nearly as great as in the case of compounds—as shown in Figure 2.

4	1		4	1	TENSION
			2	1	
			[##long#	#night##]ₙₚ	2
	2		1		
	[##long##		night##]ₙₚ		4

FIGURE 2

Again, the system makes the correct predictions. Of course, both positionings are used; and Beaver 1971b reports that he and his co-workers have compiled statistics for different periods of English poetry which show that 'occurrences of adj.–noun with back-to-back stress are well over twice as frequent in the weak–strong configuration'.

2.2. THE MONOSYLLABLE CONSTRAINT: TRISYLLABIC COMPOUNDS. Our theory makes an equally specific prediction about the treatment in iambic verse of compounds of the type *grandfather*, *swift-footed*, *housekeeping*, with disyllabic second members: see Figure 3.

	4	1		4	1	TENSION
	1	3		4		
a.	[##house##keep			ing##]ₙ		5
	1		3	4		
b.	[##house##		keep	ing##]ₙ		unmetrical

FIGURE 3

In case (a), the compound occurs in weak–strong–weak position. The first syllable is accepted in weak position by MR2a, since it is a monosyllabic word. The second syllable is accepted in strong position by MR1, and the third syllable fits in its weak position directly. This positioning is therefore metrical, with a tension index of 5.

Next consider the same type of compound shifted into strong–weak–strong position (b). The first syllable fits into its strong position directly, and the third by MR1. But the second syllable cannot undergo either branch of MR2, and the

metrical pattern is therefore not derivable by our rules. Consequently, this positioning is unmetrical.

We predict, then, that in iambic pentameter, such trisyllabic compounds should begin only in ODD positions. Remarkably, this is indeed the case, as has been noted by Magnuson & Ryder 1971.[7] They can begin in first, third, fifth, seventh, or ninth position (the last possibility involving an extrametrical syllable at the end of the line):

> (18) *Love-lacking* vestals and *self-loving* nuns   (Ven. 752)
> The hot *scent-snuffing* hounds are driven to doubt   (Ven. 692)
> And sometime where *earth-delving* conies keep   (Ven. 687)
> To say within thine own *deep-sunken* eyes   (Son. 2)
> Melodious discord, heavenly tune *harsh-sounding*   (Ven. 431)

I find that this restriction holds with no exceptions in Shakespeare's *Sonnets*, in *Venus and Adonis*, and in *The rape of Lucrece*. It also seems to hold almost completely in the middle and late plays (the three exceptions I found are MV 2.5.40, 5.1.284, and Mac. 3.2.97). This is astonishing in view of the frequency with which Shakespeare uses these compounds. In the early plays, the restriction also holds in the majority of cases, but a fair number of exceptions are found:

> (19) A knot you are of damnèd *bloodsuckers*   (R3 3.3.6)
> Rude ragged nurse, old sullen *playfellow*   (R3 4.1.102)
> Which now, two tender *playfellows* for dust   (R3 4.4.385)
> Under our tents I'll play the *eavesdropper*   (R3 5.3.221)
> Full of *rose water* and bestrewed with flowers   (TS Ind. 1.56)
> Dread prince of plackets, king of *codpieces*   (LLL 3.1.186)

This is interesting in view of the fact that Shakespeare was in the generation of poets who established this restriction in English verse (cf. §3 below).

In trochaic verse, of course, such trisyllabic compounds can begin in even positions—and indeed must begin there, for exactly the same reasons, though Shakespeare does not have enough trochaic verse to test this side of the claim:

> (20) Nose of Turk and Tartar's lips
> Finger of *birth-strangled* babe   (Mac. 4.1.29–30)

Halle & Keyser are in the same dilemma here as with the disyllabic compounds. They can make one of two predictions, depending on what they decide about secondary stress, and both predictions are wrong. If secondary stress counts as metrical stress, then there is no way to exclude the trisyllabic compounds in question from occurring in strong–weak–strong position. The second syllable can never constitute a stress maximum, as it is always preceded by a stressed syllable:

$$\overset{s}{\text{(21) hóuse}} \ \overset{w}{\text{kéep}} \ \overset{s}{\text{ing}}$$

And if secondary stress is said not to count as a metrical stress, the situation is even worse. The fact that strong–weak–strong positioning does not occur still lacks

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[7] A first formulation (Magnuson & Ryder 1970) was slightly incorrect, prompting Halle & Keyser 1971b wrongly to reject the whole claim. The correct formulation was given in Magnuson & Ryder 1971.

an explanation, since the second syllable must again fail to constitute a stress maximum, this time because it is taken to be unstressed:

(22) house keep ing
      s   w   s

And on the contrary, most of the lines that DO occur would on this assumption violate the Stress Maximum Principle; e.g.,

(23) Were an *all-eating* shame and thriftless praise	(Son. 2)
And his *love-kindling* fire did quickly steep	(Son. 153)
Or as *sweet-seasoned* showers are to the ground	(Son. 75)
If the true concord of *well-tunèd* sounds	(Son. 8)
Some fresher stamp of the *time-bettering* days	(Son. 82)
In true plain words by thy *true-telling* friend	(Son. 82)
E'en so, being full of your *ne'er-cloying* sweetness	(Son. 118)
Which works on leases of *short-numbered* hours	(Son. 124)
Simply I credit her *false-speaking* tongue	(Son. 138)
Some in their garments, though *newfangled* ill	(Son. 91)
This sour informer, this *bate-breeding* spy	(Ven. 655)
O Night, thou furnace of *foul-reeking* smoke	(Luc. 799)

Magnuson & Ryder 1971 deal with such compounds in an inconsistent manner. On p. 212 they treat them as unmetrical in any position; but on p. 216 they say they are 'clearly within the English iambic tradition' in weak–strong–weak position, and a rule is given to admit them there. This rule, however, is nothing more than a summary of the facts about the metrical behavior of this type of compound. The rule is an ad-hoc addition to the system; a simpler system would result if the facts about trisyllabic compounds were different. In the system advocated here, just the reverse is true: the facts considered in this section are a special case of a more general metrical regularity. They are, in fact, predicted by MR2a, whose main motivation is the completely different set of observations to be treated in the next section. Nothing need be added to our rules specially for the compounds. On the contrary, if these behaved in any other way, such additions would be necessary. It is in this sense that our theory explains, rather than merely accounts for, their metrical treatment.

2.3. THE MONOSYLLABLE CONSTRAINT: PHRASES. MR2a requires that a stressed syllable in weak position must constitute a monosyllabic word. We have already seen what consequences this restriction has for the positioning of compounds; let us consider now how it limits the metrical use of polysyllabic simple words.

First, MR2a implies that, in iambic verse, the first syllable of a 'spondaic' foot must be a word. For example, a line like

(24) With cold *pale weak*ness numbs *each feel*ing part   (Ven. 892)

represents the typical case of the spondaic foot (italicized). If we rewrite the line, putting polysyllabic words in its spondees, the result is contrary to Shakespeare's metrical practice:

(25) *With mal*ign weak*ness ben*umbs feel*ing parts

This fact shows that meter does not depend on stress alone. For example, we have

(26) Pluck the keen teeth from the fierce tiger's jaws   (Son. 10)

But because of the monosyllable condition on MR2a we could not have

(27) *Pluck immense teeth from enraged tigers' jaws

even though the disposition of stresses is identical. If we are to account for the different metrical status of 26 and 27, we must abandon traditional stress-bound metrics in favor of a new approach which takes account of word and phrase structure.

Second, MR2a implies that, in iambic verse, the first syllable of a trochaic foot must be a word, except (thanks to MR2b) after an intonation break. The latter proviso holds in principle also for spondees; but it cannot in practice arise there, since there are no single words with spondaic stress patterns. The following lines illustrate the types that do occur.

(28) a. Suff'ring my friend for my *sake to* approve her   (Son. 42)
        Better becomes the gray *cheeks of* the east   (Son. 132)
        Oh me, what eyes hath love *put in* my head   (Son. 148)
        That dogs *bark at* me as I halt *by them*   (R3 1.1.23)
        If yet your gentle souls *fly in* the air   (R3 4.4.11)
        Our strong *arms be* our conscience, swords our law   (R3 5.3.311)
        A black *day will* it be to somebody   (R3 5.3.280)
   b. Thou dost *love her*, because thou knowst I love her   (Son. 42)
        For how do I *hold thee* but by thy granting?   (Son. 87)
        From hence your memory *death can*not take   (Son. 81)
        Since I *left you* mine eye is in my mind   (Son. 113)
        Let me *not to* the marriage of true minds   (Son. 116)
        Whoe'er *keeps me*, let my *heart be* his guard   (Son. 133)
        She may *help you* to many fair preferments   (R3 1.3.95)
        Shall we *hear from* you, Catesby, ere we sleep?   (R3 3.1.188)
        I do suspect I have *done some* offense   (R3 3.7.111)
        I am *not in* the giving vein today   (R3 4.2.119)
        Bear thee *well in* it, and *leave us* alone   (Ado 3.1.13)
        When I *come where* he calls, then he is gone   (MND 3.2.416)
        Speak no *more of* her. Give me a bowl of wine   (JC 4.3.158)
        If I *quench thee*, thou flaming minister   (Oth. 5.2.8)
        How thou *lov'st us*, show in our brother's welcome   (WT 4.1.23)

What is excluded by MR2a is a trochaic foot whose first syllable is not a word, viz. any of the following types:

(29)   4   1   4   1
   a.   #   ' #
   b.   # '   #
   c.   #   '   #

Examples are:

(30) a. *To re/stóre to / old age / what youth / hath lost
     b. *And to / bánish / old age / where youth / hath lost
     c. *And re/stóring / old age / where youth / hath lost

Lines of this type do not in fact occur.

A number of restrictions on inverted feet have been suggested in previous metrical studies, none of which receive clear support from the facts:

(i) Jespersen claimed that inverted feet must contain a syntactic boundary corresponding to a phonological pause. Such a boundary is present in many examples, such as Jespersen's

(31) Like to a step-*dame or* a dowager

But in most of the lines of 28, no such boundary is justified, and a phonological pause between the first and second syllable of their trochees would be quite unnatural. Moreover, violations of type 29a are not repaired by a syntactic pause after the stressed syllable.

(ii) Halle & Keyser (1971a,b) propose the Stress Maximum Principle, whose effect is to disallow inverted feet which are preceded by an unstressed syllable (unless they are line- or clause-initial). Constructed lines like 25 and 27, which are unmetrical although allowed by the Stress Maximum Principle, show that it is too weak. Examples as in 28b show that it is too strong in that it fails to allow for attested kinds of verse. The fact seems to be that MR2a operates independently of the stress in the preceding metrical position, and the Stress Maximum Principle is irrelevant in Shakespeare's verse.

(iii) Magnuson & Ryder's position on inverted feet is confusing: at 1971:207–8 they label them unmetrical, but at 1971:216 they recant partially, and allow some of them back in. Their suggestion is that the metrical constraints are 'weakened' across the fourth and fifth syllables in a line (the caesural point in the Romance decasyllabic line). This simply isolates an arbitrary subclass of lines, and does not apply to most of the examples in 28. I know of nothing to show that metrical constraints are weakened at this position in the line, and it is plainly false that inverted feet occur only there.

Note that none of these three additional conditions proposed by Jespersen, by Halle & Keyser, or by Magnuson & Ryder is in itself incompatible with the rules I have proposed. If any of them were factually correct, they could be incorporated into this system by a modification of the metrical rules, although this would in each case constitute a complication of their present form. However, the conditions are in the first place not borne out by Shakespeare's actual versification; and second, they would not by themselves, even if correct, constitute a sufficient restriction on the use of trochaic feet. MR2a would still be needed to account for the absence of lines like 25, 27, and 30.

One generalization about inverted feet does appear to have some validity, however, and is not accounted for in our rules. A glance at 28 shows that trochaic feet (aside from the first foot, where they are allowed for by MR2b) occur mainly in EVEN feet (second and fourth) and less often in odd feet (third and fifth). Also, they appear to be more frequent (other things being equal) toward the BEGINNING of the line—e.g., more frequent in the second foot than in the fourth, more frequent in the third than in the fifth. This can only in part be explained historically by reference to the model of the 'double trochee' of Italian Renaissance poetry. It also seems that the distribution of SPONDEES is rather similar to that of trochees just described. The preference for even feet, and for the beginning of the line,

would thus hold for the application of MR2a, rather than for any specific foot type. If so, then we may conjecture that these facts basically reflect two general principles of poetic form which in one way or another impinge on the poetry of nearly all languages:

(a) A tendency toward dipodic structure. The second and fourth feet are strong— as opposed to the first, third and fifth, which are weak. This higher-level pattern is super-imposed on the pattern of alternating syllable strength. Thus the very common line type

> (32) *For the four winds* blow in from every coast   (MV 1.2.168)
> *I will feed fat* the ancient grudge I bear him   (MV 1.3.48)

begins with a kind of 'super-iamb' made up of the first (weak) and second (strong) foot.

(b) A tendency to reduce metrical tension toward the end of a line. This itself is of course only a special case of the principle of closure, insightfully examined by Smith 1968.

2.4. SOME APPARENT COUNTER-EVIDENCE. The above conclusions depend on an assessment of the metrical evidence which recognizes the commonplace that some disyllabic and polysyllabic words were accented differently in Shakespeare's time than they are today. Obviously, Shakespeare's meter must be determined on the basis of what, to the best of our knowledge, was Shakespeare's pronunciation. This must be established by a careful analysis of the philological evidence for each word. For example, the fourth foot of the line

> (33) He in the worst sense con*strues their* denial   (Luc. 324)

has a stressed syllable in odd position, and it is not a monosyllabic word. Instead of concluding that MR2a is wrong, we must take into account the earlier pronunciation of *construe*, about which the OED says: 'At an early date the stress was put on the first syllable, and the final reduced to *-stre, -ster: conster* continued to be the pronunciation down to the 19th c., even after it had disappeared as a written form. Walker, 1791, called this "a scandal to seminaries of learning".' A similar apparent difficulty in the line

> (34) Do I *envy* those jacks that nimble leap   (Son. 128)

is removed by the information that 'The older accentuation (envəi·) survived into the 17th c. and is still common dialectally, esp. in Sc[ots]' (OED). Because of the known historical fact that there has been much fluctuation in what words were subject to the Noun/Verb accent alternation of the type *subjéct/súbject* (Halle & Keyser 1971a:117), very little significance can be attributed to such apparently unmetrical lines as

> (35) In pur*suit of* the thing she would have stay   (Son. 143)
> The vacant leaves thy mind's *imprint* will bear   (Son. 77)

Here an earlier accentuation *púrsuit, imprínt* is the most plausible interpretation, especially where other contemporary instances requiring the same stress can be adduced:

> (36) Was this the *pursuit* of thy policy   (Marlowe, Jew of Malta 3.3.43)

Many words, such as *aspéct, occur so frequently in metrical positions that contradict their present stress, and so consistently, that there can be no doubt that they have undergone a shift in stress. Under these circumstances it is more reasonable to assume a parallel stress fluctuation in deverbal nouns like *imprint* than to take 35 as isolated exceptions to MR2a. Evidence against MR2a would have to come from cases where such stress changes are, for phonological or morphological reasons, unlikely or impossible.

Shakespeare's accentuation is also likely to have differed from ours in the extent of application of the so-called Rhythm Rule, which reverses a 3–2 stress pattern before a primary stress in the next word within a phrase, e.g. *Ténnessée Williams* → *Ténnessée Williams*; *síxtéen tóns* → *síxtéen tóns*; *únknówn áuthor* → *únknówn áuthor*:[8]

> (37) [+stress] → [2 stress] / ____ X [2 stress] Y [1 stress]
>   where X, Y contain no 1 or 2 stress, and no $_P$[
>   (P = any phrase-level constituent)

The rule does not now apply to all phrases that fit its structural analysis, e.g. *extréme féar, antíque fúrniture*. Its scope seems to have been steadily shrinking; Bridges mentions the phrase *éxtreme únction* as a survival in Irish speech. Given its more widespread application in Shakespeare's time, we can conclude that lines of the following type were probably not exceptions to MR2a:

> (38) And ex*tréme féar* can neither fight nor fly   (Luc. 230)
>   And from the for*lórn wórld* his visage hide   (Son. 33)
>   The pangs of des*píséd lóve*, the law's delay   (Ham. 3.1.73)
>   The life of purity, the su*préme fáir*   (Luc. 780)
>   These an*tíque fábles*, nor these fairy toys   (MND 5.1.3)

Of course, this assumption about stress needs some justification other than the fact that it is required in order to save the monosyllable constraint on MR2a. Otherwise our reasoning would be circular and our conclusions worthless.

We can arrive at such justification through the following considerations. If the monosyllable constraint on MR2a is wrong, then counter-examples to it should occur randomly in all sorts of cases, including those to which Rhythm Rule 37 would be inapplicable. But if our metrical rule is correct, and our phonological treatment of the apparent counter-examples is also correct, then the apparent counter-examples should all be of a specific type, namely those subject to rule 37. In fact, the latter seems to be true. In the first place, the remaining counter-examples to MR2a involve mostly non-final elements of phrases, adjectives and participles

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[8] In stating this rule I use the convention that assigning a stress of degree *n* is accompanied by automatic reduction of stresses equal to or weaker than *n* in the same constituent (Kiparsky 1966). A somewhat more complex rule is required in the framework of Chomsky & Halle. A better treatment of this phenomenon is possible with the revision suggested by Halle 1973, where both syllables in *sixteen* (cf. also Lee 1969) first receive a primary stress, and then either the first or the second is reduced depending on the context. Some problems remain, such as *állied ármies*, where the first syllable of *allied* lacks a stress in isolation and thus should not be subject to the Rhythm Rule.

before a noun, as in 37. On the theory that the monosyllabic word condition does not hold, it is a mystery why lines of the following type do not occur:

(39) *To re*fuse* Virtue in thy nakedness
        *As ga*zelles* leap a never-resting brook

Their absence follows from my proposal, since rule 37 is not applicable across a phrase boundary.

A second argument is based on the observation that certain frequent adjectives like *antique, extreme* are ALWAYS found in strong–weak position when preceding a noun with initial stress. That is, we have the configuration 40a, and never 40b:

(40) a. ... éxtreme fèar
                 $\overset{s}{\ }$ $\overset{w}{\ }$ $\overset{s}{\ }$

     b. *extreme fear
              $\overset{w}{\ }$ $\overset{s}{\ }$ $\overset{w}{\ }$

This could be explained only on the assumption that the actual pronunciation was *éxtreme féar*. If it was *extréme féar*, then the non-occurring case 40b would be permissible under any metrical theory (and indeed, the only possible one under mine, which would then exclude 40b by MR2a). These facts indeed permit an even stronger conclusion to be drawn. They show not only that 37 was an operative rule, but that it was obligatory, at least in poetic language and for a certain group of words, such as *extreme, supreme*. That conclusion is further strengthened by the spelling in

(41) The famous warriors of the anticke world   (Spenser, Son. 79)

since *-ic(k), -icke* is a spelling otherwise found only in initially stressed words, such as *music(k), comic(k)*.

A final piece of evidence in favor of rule 37 would be the line

(42) My cóncealed lady to our cancelled love   (Rom. 3.3.98)

which loses its pun (as well as its meter) if we suppose the stress to have been *concéaled*.

Beaver (1971a,b) goes far beyond the rather conservative position which I have tried to secure here. He not only assumes a lexically unrestricted Rhythm Rule, but favors beefing it up so that it will reduce virtually any sequence of stresses to an alternating pattern. Moreover, he takes this generalized form of the rule to apply not just in earlier English, but in all English poetry. In ordinary language, this certainly does not happen, and almost certainly never did. Beaver's rule would thus have the status of a prosodic rule, taking the form of a generalized version of a phonological rule of the language, viz. the Rhythm Rule proper. This is not in itself unreasonable: in much the same way, the prosodic rule of synaloepha looks like a generalization of vowel deletion in ordinary language. The problem with Beaver's rule is that it would predict the occurrence not only of 38, but also of the type 39, which is not found. Also, since Beaver's rule is optional, the absence of 40b could not be accounted for under his proposal. On these grounds the phonological treatment seems better founded.

2.5. THE ROLE OF THE PROSODIC RULE: In §1 we set up PR, stating that only the strongest of the stresses in each domain ## X ## (where X contains no ##) is metrically relevant. The immediate motivation for this is that, in polysyllabic

uncompounded words, syllables with subsidiary stresses are not distinguished metrically from completely unstressed syllables. For example, *maintain* is metrically equivalent to *attain*, and *incest* is metrically equivalent to *modest*. Were it not for our prosodic convention, positionings of the type shown in Figure 4 would be inadmissible by the monosyllable constraint on MR2a—and would thereby constitute outright metrical violations, which they clearly are not.

```
        S       W       S
                3       1
                main    tain
        1       3
        in      cest
```

FIGURE 4

PR has another remarkable consequence. As Halle & Keyser (1971b:163) and Beaver (1971b:189, fn. 12) point out, disyllabic prepositions (e.g. *among, against, upon, over, under, after*) function as if they were unstressed. Otherwise, lines like

(43) And I will comment up*on* that offense   (Son. 89)

would violate MR2. The usage appears even in such a strict versifier as Pope:

(44) Pride, Malice, Folly *against* Dryden rose   (Essay on criticism 2.458)

Magnuson & Ryder (1971:205) further note that we cannot simply say that they have no inherent stress, for then constructs like

(45) *Inbetween, before, beneath and beyond

are wrongly admitted as iambic pentameter lines. Thus the stress on prepositions is disregarded metrically when they are in construction with a noun phrase, but taken into account when they occur in isolation. And exactly this behavior is predicted by PR in conjunction with the usual conventions on word boundaries which were also outlined in §1. In 44, WBR1 gives

(46) ... #]$_{NP}$ $_{VP}$[# $_{PP}$[#against $_{NP}$[# $_N$[#Dryden#]$_N$ #]$_{NP}$ #]$_{PP}$ $_{VP}$[# ...

Simplification by WBR2 gives (omitting brackets)

(47) ... ##against#Dryden## ...

Even though *against* will be assigned a stress on the second syllable, this stress will not count when the preposition is proclitic, as in 47, since PR provides that all but the strongest stress in each domain ## X ## (where X does not contain ##) should be disregarded. Hence ##agaínst#Drýden## will be metrically valued as ##against#Drýden##, and lines like 43–44 will not violate the monosyllable constraint on MR2a. But when *against* is not proclitic, it is alone dominated by a phrasal category, and will therefore be enclosed by ## on each side—so PR cannot have an effect on it. Also, when a preposition stands before an unstressed head, it will have the strongest stress in its phrase, and therefore not be subject to PR. Thus we predict that the type *against him* should occur in weak–strong–weak position only, as in

(48) To see you here *before me*. O my soul's joy!   (Oth. 2.1.186)

2.6. FURTHER EVIDENCE FOR THE MONOSYLLABLE CONSTRAINT. In arguing for their Stress Maximum Principle, Halle & Keyser 1971b have concocted the unmetrical line

(49) *Ode to the West Wind by *Per*cy Bysshe Shelley.

This line is correctly designated as unmetrical by our rules, since MR2 is violated by the italicized syllable—a stressed syllable in a weak position which does not constitute a word. Magnuson & Ryder 1971 have, in their turn, made up a series of equally unmetrical lines which the Stress Maximum Principle wrongly fails to rule out:

(50) a. A little con*ceit*? What a dangerous thing!
     b. Intro*duced* grand*fa*ther to a*muse* friends
     c. If it be be*trayed*, slander doth approve.
     d. Fly a*way*! fly away! you dangerous thing!

These examples likewise violate MR2, and are therefore correctly rejected in our theory. Finally, the metrical lines which Halle & Keyser cite (1971a:169–70) as counter-examples to the Magnuson–Ryder rules are fully accounted for by ours. In general, then, the rules given here fit all the crucial data, both negative and positive, given by Halle & Keyser in favor of their theory or by Magnuson & Ryder in favor of theirs. However, the explanation which we give for both sets of data is different. The deviance of 49 has nothing to do with the Stress Maximum Principle, and the deviance of 50a has nothing to do with the availability of an alternative (anapestic) scansion for it, contrary to what Magnuson & Ryder maintain (1971:203). There are lines with the same rhythm as 50a in impeccably iambic poetry:

(51) Or keep / him from / heart-eas/ing words / so long   (Luc. 1782)

In general, it is perfectly possible for a line to have two or more metrical interpretations out of its metrical context (occasionally, the ambiguity may persist even in context: as in language, ambiguity of sentences is not always resolved by context). In iambic verse we also encounter lines whose most obvious scansion is dactylic, but which are still understood as iambic because the context leads us to expect iambic scansion and they satisfy the metrical rules under that interpretation as well:

(52) Love-lack/ing ves/tals and / self-lov/ing nuns   (Ven. 752)
     Simply / I cred/it her / false-speak/ing tongue   (Son. 138)

Conversely, dactylic verse can contain lines which happen to scan as perfect iambic verse, e.g. the second line in Dryden's dactylic tetrameter song from 'An evening's love':

(53) After the pangs of a desperate Lover,
     When day and / night I have / sighed all in / vain ...

2.7. THE ROLE OF PHRASE BOUNDARIES. Phrase structure is relevant to at least three aspects of versification: the application of MR2b, the division of verse into lines, and the insertion of extrametrical syllables.

MR2b says that a stressed syllable can occur in weak position after a phrase boundary which coincides with a double word boundary, viz. #] $_P$[# or [# $_P$[#. In

monosyllabic words, this option is always permissible by MR2a, but MR2b extends it to polysyllabic non-compounded words in the indicated environment. The force of MR2b is to allow inverted feet after a break in the verse.

Specifically, MR2b is applicable after any sentence boundary—

(54) Listen great things. *Brutus* and Cassius   (JC 4.2.41)

and after any clause boundary (internal sentence boundary), whether this corresponds to an obligatory break, represented by an orthographic comma, or merely an optional break:

(55) a. When that the poor have cried, *Caesar* hath wept   (JC 3.2.96)
       b. I shall find time, *Cassius*, I shall find time   (JC 5.5.105)
(56) a. I heard him say *Brutus* and Cassius
           Are rid like madmen through the gates of Rome.   (JC 3.2.273)
       b. Yet who knows not *conscience* is born of love?   (Son. 151)

It is also applicable at the beginning of a phrase (Noun Phrase, Verb Phrase, or Adjective Phrase):

(57) Within whose face *beauty* and virtue strived   (Luc. 52)
       But now is black *beauty's* successive heir   (Son. 127)
       His eye, which scornfully *glisters* like fire   (Ven. 275)
       When lofty trees I see *barren* of leaves   (Son. 12)
       Her breasts, like ivory globes *circled* with blue   (Luc. 407)
       And peace proclaims *olives* of endless age   (Son. 107)
       On horror's head *horrors* accumulate   (Oth. 3.3.370)
       And I *nothing* to back my suit at all   (R3 1.2.236)
       Whom God preserve *better* than you would wish   (R3 1.3.59)
       To make *William* Lord Hastings of our mind   (R3 3.1.162)

In reading each of these lines aloud in their context, a break could be made rather naturally before the inverted foot. Our conclusion is, then, that MR2b can apply at points where an intonation break is either obligatory or possible. These are at least those points where a phrase boundary $_P[$ coincides with a double word boundary $\#\#$. Excluded thereby are, on the one hand, phrase-internal syllables— even if preceded by $\#\#$—and, on the other, those preceded by proclitics, even if phrase-initial (subject to the reservations of §1):

$$\text{S} \qquad\qquad \text{W} \quad \text{S} \qquad\qquad \text{W} \quad \text{S}$$

(58) $*_{NP}[\# \ _A[\overset{2}{green}\#]_A \quad _N[\#\overset{1}{ol} \quad \overset{4}{ives}]_N \ \#]_{NP}$

       $*_{PP}[\quad \# \quad \overset{4}{in} \quad _{NP}[\# \ _A[\overset{2}{bar} \quad ren\#]_A \quad _N[\#\overset{4}{a} \ bodes]_N \ ]_{NP} \ \#]_{PP}$

The favored location for inverted feet is, of course, the beginning of the line:

(59) a. *Nothing*, sweet boy. But yet like prayers divine   (Son. 108)
       b. *Making* dead wood more blest than living lips   (Son. 128)

The question arises whether such line-initial inversions require a third branch of MR2. If we introduce a special symbol (say, $\|$) to denote the beginning of a line, then we would add to MR2 the environment

MR2c: ... in env. $\| \ \underline{\quad\quad}$

But it is not clear that this new case is actually necessary. In Shakespeare's verse, the beginning of a line generally coincides with a potential or obligatory break, in fact exactly with what we designate as #] ₚ[# or [# ₚ[#. Of course, the strongest boundaries can be left inside the line, and often are—with great effect, as in this marvelous passage:

> (60) Age cannot wither her, nor custom stale
> Her infinite variety. Other women cloy
> The appetites they feed, but she makes hungry
> Where most she satisfies. For vilest things
> Become themselves in her, that the holy priests
> Bless her when she is riggish.   (Ant. 2.2.240–45)

In all such lines, MR2b suffices to provide for initial inverted feet:

> (61) a. ... Epicurean cooks
> *Sharpen* with cloyless sauce his appetite   (Ant. 2.1.24–5)
> b. ... her impatience, which not wanted
> *Shrewdness* of policy too, ...   (Ant. 2.2.68–9)
> c. ... I have a ship
> *Laden* with gold.   (Ant. 3.11.4–5)

In fact, in Shakespeare's poems, and in the early and middle plays, all lines begin at a point where a break is possible or obligatory. This must be incorporated into the specification of the basic patterns, e.g. for the iambic pentameter:

> BASIC PATTERN 1: A line is a sequence of ten syllables, alternatingly with [4 stress] and [1 stress], beginning at a syntactic configuration #] ₚ[# or [# ₚ[#.

Because of this fact, MR2b is automatically applicable at the beginning of every line, and the new MR2c is simply not needed.

But in the later plays—especially *Coriolanus*, *Antony and Cleopatra*, *Cymbeline*, *A winter's tale*, and *The tempest*—a characteristic new type of line division begins to appear. Proclitic elements, such as conjunctions (*and*, *but*, *or*), prepositions, and complementizers (*that*, *which*, *as*) which are phonologically grouped with the following phrase, are now allowed to be stranded at the end of a line:

> (62) a. Thy mother was a piece of virtue, and
> She said thou wast my daughter   (Tmp. 1.2.56–7)
> b. A freckled whelp hag-born—not honored with
> A human shape ...   (Tmp. 1.2.283–4)
> c. Some food we had, and some fresh water, that
> A noble Neapolitan, Gonzalo ...   (Tmp. 1.2.160–61)

From a syntactic point of view, this freer enjambment amounts to dropping the requirement that lines must begin with ##. Accordingly, we assume this basic pattern for late Shakespeare:

> BASIC PATTERN 2: A line is a sequence of ten syllables, alternatingly with [4 stress] and [1 stress], beginning at a syntactic configuration ₚ[.

It seems clear that, in such cases, no break is possible between the lines, even optionally. Let us refer to a line which does not begin with ## as a RUN-ON LINE.

The question about MR2c now reduces to the question whether run-on lines ever begin with stressed syllables in polysyllabic words. If they do, then MR2c is necessary; if they do not, then MR2c is not necessary—and indeed, not possible, since it would permit a non-occurring type of line.

The somewhat surprising fact seems to be that run-on lines do NOT begin with stressed syllables in polysyllabic words. If they begin with stressed syllables, these are monosyllabic words, as permitted by MR2a:

(63) a. ... the common liar, who
      Thus speaks of him at Rome;   (Ant. 1.1.60–61)

    b. ... his glory which
      Brought them to be lamented.   (Ant. 5.2.364–5)

    c. That valor is the chiefest virtue, and
      Most dignifies the haver.   (Cor. 2.2.88–9)

    d. Pray you, go fit you to the custom and
      Take to you, as your predecessors have   (Cor. 2.2.147–8)

    e. Hath an aspect of intercession which
      Great nature cries, 'Deny not!'   (Cor. 5.3.32–3)

    f. ... A woman that
      Bears all down with her brain,   (Cymb. 2.1.58–9)

    g. ... Why, that was when
      Three crabbèd months had soured themselves to death
                               (WT 1.2.101–2)

    h. ... that nuptial which
      We two have sworn shall come.   (WT 4.4.50–51)

    i. Hides not his visage from our cottage but
      Looks on alike.   (WT 4.4.455–6)

    j. Might thus have stood begetting wonder as
      You, gracious couple, do.   (WT 5.1.133–4)

    k. ... did give us, with
      Rich garments, linens, stuffs, and necessaries   (Tmp. 1.2.163–4)

If they begin with polysyllabic words, their first syllable is unstressed:

(64) a. My hazards still have been your solace, and
      Believe't not lightly—though I go alone   (Cor. 4.1.28–9)

    b. Your stinking greasy caps in hooting at
      Coriolanus' exile. Now he's coming;   (Cor. 4.6.132–3)

    c. The city ports by this hath entered and
      Intends t'appear before the people, hoping   (Cor. 5.6.6–7)

With stranded auxiliaries, and with *not*, however, we find a fair number of examples:

(65) a. ... the full Caesar will
      Answer his emptiness!   (Ant. 3.13.35–6)

    b. ... that mine own servant should
      Parcel the sum of my disgraces by   (Ant. 5.2.162–3)

    c. ... not frenzy, not
      Absolute madness could so far have raved   (Cym. 4.2.134–5)

We might speculate that auxiliaries and *not*, unlike prepositions and complement-izers, are not proclitics in Shakespeare's language. Note that they can be followed freely by parenthetical elements.

If the above observations are correct, then we can conclude that we need not add MR2c to the metrical system of Shakespeare's earlier verse, and that we CANNOT add it to that of Shakespeare's later verse. The second part of this conclusion must remain tentative until a closer examination of all the texts confirms the facts, and the special status of auxiliaries and *not* can be supported on syntactic grounds.

Finally, there are some metrical rules that change the number of positions in the basic pattern. One rule deletes the initial, weak position in iambic verse, creating so-called 'headless lines'. These are of rather marginal importance in Shakespeare and later English poetry. More frequently applied is a rule that inserts a weak 'extrametrical' syllable before a syntactic boundary and at the end of a line:

(66) Laugh at / me, make / their pas/time at / my sor*row*   (WT 2.3.2–4)
    As check/ing at / his voy*age*, / and that / he means   (Ham. 4.7.63)
    That is / the mad*man*. / The lov/er, all / as fran*tic*   (MND 5.1.10)

If such extrametrical syllables occurred only at the end of a line, they could easily be made optional elements of the basic pattern. The fact that they also occur within a line before a break could not be accounted for in that way. The two cases are easily derived, however, by the metrical rule which inserts the extra position:

METRICAL RULE 3 (MR3): $\emptyset \rightarrow$ [α stress] in env. ____ $\#$ $_\text{P}$[$\#$
    where $\alpha \neq 1, 2$

This formulation combines the line-internal and line-final cases. Moreover, it makes the interesting (and apparently correct) prediction that a line-final stranded proclitic in cases like 62–64 should never be extrametrical—i.e., that such a proclitic should always be in the tenth position, rather than in an eleventh position inserted by MR3, for that rule cannot operate before a single $\#$.

We do not want the output of MR3 to be subject to MR2, which could introduce a stronger stress than is allowed in extrametrical position. I shall assume that this is done by ordering MR3 after MR2, though simultaneous application of the three rules is also consistent with the facts.

In the Halle–Keyser approach, which has no metrical rules in my sense, I cannot find a natural way of relating line-final and line-internal extrametrical syllables to each other. They give no formal account of the line-internal case, although they mention its existence (1971a:172); and indeed I cannot see how they would account for it without some modification of their framework. In addition to these difficulties, their treatment of extrametrical syllables also faces those mentioned in §2.1 above.

Finally, a rule with the opposite effect from MR3 will be required in trochaic (and dactylic) verse, in order to delete a weak position under conditions similar to those in which MR3 inserts one.

3. EXTENDING THE SYSTEM. Freeman 1968a has discussed the frequency with which strong positions are realized as stress maxima, and has shown that this is

a useful index of metrical style. His results can be reformulated, and indeed made somewhat more precise, in terms of the index of metrical tension defined in §1 above. Most of English poetry—e.g. that of Spenser, Shakespeare, Pope, Wordsworth, Keats, Tennyson, Dryden, Frost, and Thomas—is governed by Metrical Rules 1 and 2; and the diversity within this tradition is reducible in large part to statistical variation in use of the options allowed by them.

Even where this metrical system remains fixed, there is much change in the prosodic conventions. It is well known that the conditions for synaloepha, syllabic value of syllabic nasals and liquids, and desyllabification of prevocalic *i* vary rather widely in different periods, and do not always coincide even in contemporary poets. This prosodic variation is independent of the metrical rules, and I shall not attempt to deal with it here.

The metrical system characterized by MR1–2 seems to emerge for the first time in Sidney, Marlowe, Shakespeare, Spenser, and many of their contemporaries. Earlier poets, such as Wyatt, have a different metrical system, showing a conspicuous absence of the monosyllable constraint on MR2a. This less restricted system persists in the poetry of Donne and, to a lesser extent, in Milton. After a gap of two centuries, it re-appears in some 19th and 20th century poetry.

3.1. POPE. Probably the strictest type of iambic pentameter in English poetry is the neo-classical heroic couplet, especially that of Alexander Pope. An analysis in terms of the system proposed in §1 makes clear the nature of this strictness.[9] First, Pope never violates the monosyllable constraint (MR2a), either in simple words or in compounds. The only exception which I have found is deviant by design, and is in fact a joke on certain metrists. It occurs in a passage lambasting hack critics and philologists whose only pleasure in poetry is to find metrical faults:

> (67) Each wight, who reads not, and but scans and spells,
>   Each *Word-catcher*, that lives on syllables
>
>   (Epistle to Dr. Arbuthnot, 165–6)

It is pretty clear that the meter (and perhaps also the rhyme) are intended to provide an example of what a pedantic 'Word-catcher' would be looking for. The example is interesting because it suggests that Pope was aware of the principle embodied in MR2a, rather than simply following it unconsciously.

Second, the environment of MR2b must for Pope be construed more strictly as an obligatory break corresponding to at least a comma, i.e. generally at clause or sentence boundary. Phrase boundaries do not ordinarily suffice for inversion in Pope. Similarly, Pope divides lines only at obligatory breaks. Thus it is true for both Pope and early Shakespeare that the points of possible line division are the same as the points of possible inversion in polysyllables. But Pope's versification is based on tight phrasing, where weaker syntactic boundaries cannot be implemented as breaks, as opposed to Shakespeare's loose, 'cantabile' phrasing.

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[9] The following discussion is based on the works contained in W. K. Wimsatt's *Alexander Pope: selected poetry and prose* (Rinehart edition).

Third, the over-all level of metrical tension in Pope is appreciably lower than in Shakespeare. The following lines approach the upper limit for Pope:

(68) To the first good, first perfect, and first fair (Tension: 12)
                                                  (Essay on man 2.24)
         Grafts on this passion our best principle (Tension: 14)   (Ibid. 2.176)
         Fans clap, silks rustle, and tough whalebones crack (Tension: 10)
                                                  (Rape of the lock 5.50)

Lines of this complexity are ordinary in Shakespeare, but infrequent in Pope. The lower level of tension is also reflected in the rarity of the more complex positionings discussed in §2 above. The trochaic foot par excellence, of the form |1 4|, with the maximal tension of 6, is rare inside a line:

(69) On the rich quilt *sinks with* becoming woe   (Rape of the lock 4.35)
         And the pale ghosts *start at* the break of day   (Ibid. 5.52)
         Thus wit, like faith, by each *man is* applied   (Essay on criticism 1.394)
         They love themselves, a third *time, in* their race,   (Essay on man 3.124)
         See the sole bliss *Heaven could* on all bestow   (Ibid. 4.327)
         An angel tongue, which no *man can* persuade   (Moral essay 1.199)

Somewhat more frequent are trochaic feet with compounds beginning in odd position (metrical tension: 5).

(70) Nor is Paul's church more safe than Paul's *churchyard*
                                                  (Essay on criticism 3.623)
         Charmed the *smallpox*, or chased old age away (Rape of the lock 5.20)
         Friendly at Hackney, faithless at *Whitehall*   (Moral essay 1.76)
         But Wisdom's triumph is *well-timed* Retreat   (Ibid. 2.225)
         Spleen, Vapours, or *Smallpox*, above them all   (Ibid. 2.267)
         'Twas no *Court badge*, great Scrivener! *fired thy brain*   (Ibid. 3.145)
         And heads the bold *Trainbands*, and burns a Pope   (Ibid. 3.214)
         May some choice patron bless each grey *goose quill*
                                                  (Epistle to Dr. Arbuthnot, 249)
         And suckle Armies, and *dry-nurse* the land   (Dunciad 1.316)

It is only by virtue of this possibility that trisyllabic compounds are usable at all in Pope's verse:

(71) As to soft gales *top-heavy* pines bow low   (Dunciad 2.391)
         Some, deep *Freemasons*, join the silent race   (Ibid. 4.571)

Inverted feet can also appear when the second member of a disyllabic compound is followed by an unstressed word (tension: 4):

(72) Of showers and sun*shine, as* of Man's desires   (Essay on man 1.152)
         From dirt and sea*weed as* proud Venice rose   (Ibid. 4.327)
         In a dun night*gown of* his own loose skin   (Dunciad 2.38)
         Others a sword-*knot and* laced suit inflame   (Ibid. 2.52)
         He dies, sad out*cast of* each church and state   (Moral essay 1.204)
         Shine, buzz, and fly*blow in* the sun   (Ibid. 2.28)

By Pope's time, the stress system of English had reached nearly its present form, so in general we can consider Pope's meter from the viewpoint of modern pronunciation. This fact, together with the stringency of Pope's versification, puts our metrical rules and tension hierarchy to a demanding test, which they pass with distinction. Lines which violate the categorical restrictions of MR2 do not occur (except for the deliberate exception 67, which literally proves the rule). And, as we have seen, the tension index suggested in §1 closely matches the relative frequencies of usage in Pope.

3.2. POETS NOT OBSERVING THE MONOSYLLABLE CONSTRAINT. It is well known that Donne was declared by Ben Jonson to have deserved hanging for writing unmetrical verse. As far as I know, the charge was never made more specific than that. I would like to rectify the situation here. What so bothered the contemporary champions of 'correctness' was that Donne's poetry contains, in numbers too great to blame on carelessness or textual inaccuracy, lines that violate the monosyllable condition on MR2. Donne seems to apply MR2 rather freely in POLYSYLLABIC words:

(73)	Weav'd in my low devout *mel*ancholie	(La corona, 1)
	Weake en*ough*, now into our world to come	(Ibid. 3)
	That would have need to be *pit*ied by thee	(Ibid. 3)
	Which him*selfe* on the Doctors did bestow	(Ibid. 4)
	Nor had time mellowed him to this *rip*enesse	(Ibid. 4)
	But first hee, and hee first *en*ters the way	(Ibid. 7)
	By sicknesse, deaths *her*ald, and champion	(Holy sonnets, 4)
	Shall be*hold* God, and never taste deaths woe	(Ibid. 7)
	If faithfull soules be a*like* glorified	(Ibid. 8)
	Make sinnes, else equal, in mee more *hei*nous	(Ibid. 9)
	But is *cap*tiv'd, and proves weake or untrue	(Ibid. 14)
	First tra*vail* we to seeke and then make Love	(Ibid. 18)

For Donne, then, the monosyllable condition on MR2 does not hold. It is quite possible, of course, that some less restrictive condition on MR2 takes its place in Donne, though I cannot at present see what this condition would be. I also leave it for further investigation to decide whether the monosyllable condition is completely inoperative, or whether it has gone from a categorical to a relative condition, functioning in some way to determine metrical tension. What is clear so far is merely that the monosyllable condition cannot be categorical in Donne, and that his metrical rules are thus different from those of the main tradition of English poetry.

In a sense, Donne's violations of MR2a are proof of its validity elsewhere. The fact that lines as in 73 are encountered at every step in Donne is further proof that their absence in Shakespeare, Pope, Wordsworth, and other 'mainstream' poets cannot possibly be accidental, but must be due to the requirement of their metrical system. This conclusion is strengthened by a further correct prediction that is made by dropping the monosyllable constraint. We have seen that this constraint explains why trisyllabic compounds of the *earth-shaking* type must begin in weak position. It follows that Donne, who lacks the monosyllable con-

straint, should allow these compounds even beginning in strong position. And this is indeed the case:

| (74) | To *peace-teaching* Lawyer, Proctor, or brave | (Elegy, 14) |
| | None doth; but *all-healing* grace and spirit[10] | (Holy sonnets, 16) |

Violations of the monosyllable constraint are also found in Milton's blank verse:

(75)	Before thy fellows, amb*itious* to win	(PL 6.160)
	Beyond all past example and *future*	(PL 10.840)
	Uni*versal* reproach, far worse to bear	(PL 6.34)

They are frequent enough that the monosyllable condition cannot have been categorical in Milton's verse, but still not so frequent that MR2 could have been simply unrestricted. In this respect, Milton's metrics is transitional between the disappearing Renaissance system and the new system with the categorical mono-syllable condition.

Milton also extends enjambment, but in a different way than Shakespeare does in his late plays. Milton allows lines to end in the middle of a phrase:

(76) a.	But all that fair and good in thy divine	
	Semblance, and in thy beauty's heavenly ray	(PL 9.606–7)
b.	... These, these and many more	
	Causes import your need of this fair fruit	(PL 9.730–31)
c.	Great joy he promis'd to this thought, and new	
	Solace in her return, so long delay'd	(PL 9.846–7)
d.	To judgment he proceeded on the accursed	
	Serpent, though brute ...	(PL 10.164–5)

However, there is apparently always a ## boundary between lines in Milton; i.e., the kind of stranding of proclitics that occurs in late Shakespeare is not attested in Milton. We can summarize the variation in enjambment as follows:

	IN THE POETRY OF	LINE DIVISION REQUIRES AT LEAST
(77)	early Shakespeare	$_P[$ coinciding with ##
	late Shakespeare	$_P[$
	Milton (*Paradise lost*)	##

Note that the examples of 76 are not sufficient to prove the need for MR2c (see §2.7) in Milton's verse: as 75 shows, such inversion is possible even line-internally with no preceding boundary of any kind.

Among some of the Renaissance poets, the monosyllable constraint is frequently broken; at best it figures as a tendency. This is well illustrated by the following lines of Wyatt:

(78)	Wherewith Love to the harts *forest* he fleeth
	Leaving the enterprise with pain and cry,
	And there him hideth and not *appeareth*.
	What may I do? When my *master feareth*,

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[10] Here *spirit* rhymes with *yet*, and so must be disyllabic. Note that both lines have three successive trochaic feet. On the basis of stress alone, the second has a tension of 18, not counting what the multiple violations of the monosyllable condition might contribute.

> But in the field with him to live and die,
> For good is the life ending faithfully.

Auden (1962:46–7) has discussed these lines appreciatively, declaring that they had influenced the rhythm of some of his own lines.[11] Though Auden does not explicitly say it, what is 'irregular' about them is that they violate the mono-syllable constraint in the italicized syllables of lines 1, 3, and 4. As far as I can see, lines 2 and 5 might come straight from Shakespeare; line 6 violates a con-straint on the caesura which most later poets observe strictly.[12]

3.3. TROCHAIC METER. The metrical rules given in §1 have been justified here, up to now, only on the basis of iambic verse. But nothing in the rules limits their scope to this type of meter: they should also operate, where applicable, to characterize the permissible varieties of trochaic, dactylic, and anapestic verse in English. In this and in the next section, I shall try to show that this expectation is generally borne out, though a few minor additions to the system appear to be needed.

The applicability of MR1 in trochaic verse needs no documentation. As to MR2, the situation is a good bit more complicated than either traditional or more recent metrical studies would indicate. When it applies alone, it turns trochees into spondees; when it applies jointly with MR1, the result is an iambic foot. To what extent are such feet actually found in trochaic verse?

In order to arrive at a precise answer, we shall first have to make certain essential distinctions. In the case of iambic meter, blank verse and Hudibrastics are governed by the same metrical rules; but for stylistic reasons, they show greatly differing degrees of complexity in their utilization of these rules. The over-all metrical tension constitutes an index of this complexity. A similar observation can be made about trochaic verse. We may make a rough division of trochaic poems into two classes (without implying that the two are always sharply distinguishable). The first is a relatively complex type, familiar from numerous songs and from such poems as Shelley's 'To a skylark' or Longfellow's 'Psalm of life'. It can be termed LYRIC TROCHAIC. The second is a relatively simple type, NARRATIVE TROCHAIC, which is exemplified by 'Hiawatha', 'The Raven', and 'Locksley Hall'.

The principal difference between the two is in how often MR2 applies. In lyric trochaic verse, it applies with about the same frequency as in most iambic verse. Even a short lyric poem will have 'spondaic' feet generated by the application of MR2 to weak positions:

(79) Hail to / thee, *blithe* / spirit	(To a skylark)
Whose in/tense *lamp* / narrows	(Ibid)
In the / white *dawn* / clear	(Ibid.)
In its / own *green* / leaves	(Ibid.)
In the / world's *broad* / field of / battle	(A psalm of life)
Lives of / great *men* / all re/mind us	(Ibid.)
Let the / dead *past* / bury its / dead	(Ibid.)

[11] I owe this reference to Andrew Carstairs.
[12] I discuss this constraint in my forthcoming *Syntax of Verse*.

But other trochaic poems—typically, longer narrative poems—have a very low percentage of spondaic feet. There are only a couple of them in 'The Raven' and in 'Locksley Hall':

(80) But the / Raven / still be/guiling / all my / sad *soul* / into / smiling

(The Raven)

Leave no / black *plume* / as a / token / of that / lie thy / soul
hath / spoken   (Ibid.)
Catch the / wild *goat* / by the / hair, and / hurl their / lances / in
the / sun   (Locksley Hall)
Let the / great *world* / spin for / ever / down the / ringing / grooves
of / change   (Ibid.)

Then what about iambic feet in trochaic verse? It is commonly said that they do not occur at all. This is repeated both in the traditional metrical literature (Bridges, 54; Jespersen) and in more recent works (Halle & Keyser 1971a, Hascall 1971). A look at the poetry shows that this is an oversimplification. A more accurate statement of the facts is that inverted feet occur in all kinds of trochaic verse; and that they are moderately frequent in lyric trochaic verse, but quite rare in narrative trochaic verse. Examples from lyric trochaics:

(81) *The blue* / deep thou / wingest   (To a skylark)
Soothing / *her Love-*/laden   (Ibid.)
By warm / winds de/flowered   (Ibid.)
And sinks / down, down / like that / sleep   (Shelley, Euganean Hills)
To find / refuge / from di/stress   (Ibid.)
In the / waters / *of wide* / Agony   (Ibid.)
Wilt thou / be when / *the sea-*/mew   (Ibid.)
Like thought-/winged / Liber/ty   (Ibid.)
Sailing / *o'er life's* / solemn / main   (A psalm of life)
Be not / *like dumb* / driven / cattle   (Ibid.)

But there are no examples in 'The Raven', and only one in 'Locksley Hall':

(82) Summer / isles of / Eden / lying / *in dark* / purple / spheres of / sea   (1.164)

This is, of course, exactly the situation which we would predict. One of the basic claims that our system makes is that inverted feet, in both iambic and trochaic poetry, arise through the joint application of MR1 and MR2 in the same foot: thus the conditions under which inverted feet appear should (unless special restrictions intervene) be a summation of the conditions under which 'pyrrhic' and 'spondaic' feet appear. Pyrrhic feet are unrestricted; and so we end up with the prediction that iambic feet should be possible in trochaic verse in proportion as spondaic feet are—though they should be more complex, and consequently less frequent, inasmuch as they involve the application of the additional rule MR1. Since this appears to be correct, we can conclude that trochaic verse confirms the metrical theory of §1.

Our rules for iambic verse have still another consequence for trochees. Because of the condition placed on MR2a, a stressed syllable in weak position must be a

monosyllabic word. This means that the SECOND syllable of a 'spondaic' or 'iambic' foot in trochaic verse must be a word. This holds true of all the examples given above, and I have found no exceptions so far.

The upshot of the preceding is that, in order to account for trochaic verse, we do not need to change anything in the metrical rules that govern iambic verse. These rules, when applied to basic patterns of a trochaic form (i.e. $[1,4]^n$) will generate the actually occurring prosodic variants—and, as far as we can now tell, no unmetrical ones. We need only take note of the fact that the over-all metrical tension in trochaic verse varies, like that of any other kind of verse, depending on the stylistic level.

3.4. TERNARY METERS. How do our metrical rules fare in dactylic and anapestic verse? I shall concentrate here on the latter—which, in tetrameter lines, has at times been a popular form in songs and light lyrics. The basis of my discussion will be Byron's poetry, where this meter is rather frequently used. It is my impression that the conclusions that can be drawn from this corpus have general validity for ternary meters in English, though this would of course have to be checked by a systematic investigation.

In ternary meters, the application of MR1 produces long sequences of unstressed syllables, and is for that reason disfavored. This is not an absolute prohibition which could be built into the metrical rules, but a stylistic factor which is analysable separately from the abstract system. Lines which do show MR1 at work are:

(83) And redeemed, if they *have* not retarded, thy fall   (The Irish avatar)
　　　But *thou* wert not fated affection to share   (To an oak at Newstead)
　　　'Tis *but* as a dead-flower with May-dew besprinkled
　　　　　　　　　(Stanzas written on the road between Florence and Pisa)

MR2 applies frequently in anapestic meter. The word-boundary condition on MR2a holds for the second weak position:

(84) *Such*, such was my hope, when in infancy's years
　　　　　　　　　　　　　(To an oak at Newstead)
　　　Remembrance *still* hallows the dust of the dead   (Ibid.)
　　　That dog thy *young* growth, and assist thy decay   (Ibid.)
　　　The *deep* thoughts that dwell in that silence of heart
　　　　　　　　　　　　　(Stanzas for music)
　　　Flashed back on the last glance I gave to thy wall
　　　　　　　　　　(On the day of the destruction of Jerusalem by Titus)
　　　And the eyes of the sleepers *wax'd* deadly and chill
　　　　　　　　　　　　(The destruction of Sennacherib)
　　　And their hearts but *once* heaved, and for ever grew still!   (Ibid.)
　　　And the tents were *all* silent, the banners alone   (Ibid.)
　　　Tears fall on his chain, though it drops from his hands
　　　　　　　　　　　　　(The Irish avatar)
　　　Even Tyranny listening *sate* melted or mute   (Ibid.)
　　　Spread—spread, for Vitellius, the royal repast   (Ibid.)

In the first weak position, the monosyllabic word constraint is waived. MR2a, as it now stands, allows the unstressed syllable to be replaced by a monosyllabic word with either primary or secondary stress:

(85) From the last *hill* that looks on thy once holy dome
                    (On the day of the destruction of Jerusalem by Titus)
       Flashed back on the last *glance* I gave to thy wall   (Ibid.)
       Had reflected the last *beam* of day as it blazed   (Ibid.)
       For the Angel of Death *spread* his wings on the blast
                    (The destruction of Sennacherib)
       Of ages, the first, *last* the saviour, the one!   (The Irish avatar)
       But back to our theme! *Back* to despots and slaves!   (Ibid.)
       On his right *hand* behold a Sejanus appears!   (Ibid.)

(86) On thy leaves yet the day-*beam* of ages may shine
                    (To an oak at Newstead)
       I beheld but the death-*fire* that fed on thy fare
                    (On the day of the destruction of Jerusalem by Titus)
       The hosts with their banners at sun*set* were seen
                    (The destruction of Sennacherib)
       'Tis but as a dead-*flower* with May-*dew* besprinkled
              (Stanzas written on the road between Florence and Pisa)

But there are also numerous examples with polysyllabic words in the equivalent metrical position, either with primary or secondary stress:

(87) Uninjured by time, or the rude *winter's* breath
                    (To an oak at Newstead)
       For still in thy bosom are life's *ear*ly seeds   (Ibid.)
       For centuries still may thy boughs *light*ly wave   (Ibid.)
       And here, will they say, when in life's *glow*ing prime   (Ibid.)
       Perhaps he has poured forth his young *sim*ple lay   (Ibid.)
       From the last hill that looks on thy once *ho*ly dome
                    (On the day of the destruction of Jerusalem by Titus)
       Let the poor *squa*lid splendour thy wreck can afford   (The Irish avatar)
       Till, like Babel, the new *roy*al dome hath arisen!   (Ibid.)
       Without one *sing*le ray of her genius, without   (Ibid.)
       I haye known *no*ble hearts and great souls in thy sons   (Ibid.)
       Yes, happy are they in their cold *Eng*lish graves!   (Ibid.)

(88) That thy dark-*wav*ing branches would flourish around
                    (To an oak at Newstead)
       And the fast-*fet*tered hands that made vengence in vain
                    (On the day of the destruction of Jerusalem by Titus)
       As cold as the spray of the rock-*beat*ing surf
                    (The destruction of Sennacherib)
       Could that long-*with*ered spot but be verdant again
                    (The Irish avatar)

I have been unable to find any examples breaking the monosyllabic word condition in the SECOND weak position of a foot; and it is also my intuition that this would constitute a metrical violation. Thus the line

(89) Oh, say, can you see by the dawn's early light

sounds really wretched if we replace *early* with an end-stressed disyllabic word:

(90) *Oh, say, can you see by the dawn's *intense* light

This shows the need for revising MR2. We add to it another branch which generates the attested anapestic patterns:

METRICAL RULE 2d: [4 stress] → [β stress] in env. _____ [4 stress]

This formulation requires either that MR1 and MR2 should apply simultaneously, or that MR2 should precede MR1 in the ordering. We do not want a [4 stress] from MR1 to provide an environment for the application of MR2d, which would mean that trochaic feet would be freely generated in iambic verse, even in polysyllabic words. Thus, while it is evident that some rule with the effect of MR2d is required, .we must leave open here, for lack of relevant evidence, the question of how that rule is to be formally incorporated into the system. The general parallelism of metrical and phonological rules which has become apparent at every step would naturally suggest that linear ordering is the right mechanism, although nothing in our data is incompatible with the other alternative of simultaneous application.

I likewise leave open the question of whether MR2d applies in dactylic meter. If a study of that meter shows that it is inapplicable there, or applies in a different way than suggested by the above formulation, then it will be necessary to modify the rules accordingly.

Of course, MR2 can apply twice in a foot:

(91) When the blue *wave rolls* nightly on deep Galilee
                                    (The destruction of Sennacherib)
      But I marked not the twi*light beam* melting away
                          (On the day of the destruction of Jerusalem by Titus)

But the contiguous application of MR1 and MR2 is as rare in ternary meters as it is in trochaic meter:

(92) a. And if *not* / *shot* or hanged, / you'll get knight/ed
                                    (When a man hath no freedom)
      b. Lo, George, / the triumph/ant *speeds ov*/er the wave
                                    (The Irish avatar)
      c. I left / thee, my Oak, / and, since *that* / *fa*tal hour
                                    (To an oak at Newstead)

Note that, in all these cases, a stressed syllable in weak position stands between two unstressed syllables. Thus even ternary meters contradict the Stress Maximum Principle.

3.5. INTIMATIONS OF UNIVERSAL METRICS. Systematic relationships of the sort we have been finding justify treating the whole metrical repertoire of English as a unified system, allowing us to describe changes in it in terms of that system. But we must go even further: a theory of meter cannot restrict itself to one poetic tradition, any more than a theory of grammar can restrict itself to one language.

We must make our theory account for metrical systems of other languages, and begin to construct a 'universal metrics'. The increased scope of the theory will limit the range of possible hypotheses, and decide many questions which would remain moot if we stuck to English alone. Only when the foundations have been laid for a general theory of meter will we be able to begin raising seriously such questions as the relationship of poetic meter to rhythm in music and other arts, and to rhythm in biological organisms in general.

It is clear that English shares at least some of the elements of its metrical system with other languages; e.g., the monosyllable constraint appears in one form or another in the stress-based verse of many languages. Chisholm 1973, citing work by Magnuson & Ryder, finds that German trisyllabic compounds of the type *Stammtische* always occur in weak–strong–weak position, as in English (cf. §2.2 above); this suggests that the monosyllable constraint may also be valid in German. Chisholm finds further that derivational suffixes fall into two types. One type includes *-heit/-keit, -fach, -los, -voll, -tum, -falt, -kunft, -wart/-wärts, -haft, -lein, -arm, -reich, -wert*: trisyllabic words with this type of suffix are placed in weak–strong–weak position. The other type includes suffixes like *-ig, -ling, -ich, -nis, -at, -icht, -sal, -rich, -ing, -lich, -e, -isch, -ung, -sam, -in*:[13] words with these suffixes are placed in a strong–weak–strong position. Chisholm assumes that this difference in positioning reflects a stress difference between the suffix types, and argues that the stress rules of Kiparsky 1966 must be revised to assign a stress to the suffixes of the first type, but not the second. Ultimately, he claims, the difference between the suffix classes has historical causes: the first class contains the suffixes which were retained as independent lexical items at least into Middle High German, while the second class contains the suffixes which disappeared as independent lexical items before Middle High German.

This historical correlation is suggestive; but of course etymology cannot in this case directly influence meter, since it is neither relevant nor even known to the poet. Historical facts can directly account for a regularity in a living poetic tradition only when they correspond to synchronically valid derivations in the grammar of a language (for some such cases, see Zeps 1963, 1973; Kiparsky 1968, 1972). The MHG or post-MHG origin of some suffixes could not directly determine modern German verse structure, though it could do so indirectly via some reflex in the synchronic grammatical system of modern German. What could this reflex be?

The suggestion that stress is the mediating factor is unsatisfactory; it is simply not true that there is a consistent stress difference between the two suffix types. The words *einfache* (Type 1) and *langsame* (Type 2) are stressed alike. In general, suffixes with reduced vowels ([ə], and [ɪ] before palatals) have no stress, and suffixes with full vowels have some degree of secondary stress. While all suffixes of Type 1 have full vowels, suffixes of Type 2 have both full and reduced vowels.

There is an alternative synchronic explanation which does not rely on dubious stress distinctions. Given the fact that the monosyllable constraint holds in Ger-

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[13] Chisholm also found six examples with *-schaft*, which were divided equally between the two types.

man—at least in its relevant portion, as evinced by the behavior of compounds like *Stammtische*—we can suppose that the suffixes of Type 1 are morphologically like second members of compounds, whereas those of Type 2 are not. Now MR2a and PR directly predict the observed positioning, on the basis of the usual assumption that suffixes with full vowels have a subsidiary stress, while suffixes with reduced vowels have none:

$$
\begin{array}{cccc}
4 & 1 & 4 & 1
\end{array}
$$

(93) TYPE 1   ##Gȯtt##hëit   ën##   metrical

           ##Gȯtt## *hëit*   ën##   unmetrical
                                  (*heit* violates MR2a)

     TYPE 2   ##*lang*   sȧm   ė##   unmetrical
                                 (*lang* violates MR2a)

           ##lang · sȧm   ė ##   metrical

Gottheiten will violate the monosyllable condition when its (accented) suffix is placed in weak position. Note that this requires that all Type 1 suffixes have unreduced vowels, which is in fact true. The type *langsame* will, on the other hand, violate the monosyllable condition when its stem is in weak position, since the stem is not a monosyllabic word in the required sense of standing between ## boundaries. The suffix in *langsame*, even though stressed, will not violate the monosyllable condition by virtue of PR, which directs us to disregard all but the highest stresses in each domain ## X ## (where X contains no ##). For Type 2 suffixes, then, it does not matter whether the suffix is stressed or not—and in fact, this type is represented by suffixes with both full and reduced vowels.

Of course this explanation, however neat, remains conjectural until the required ## boundaries are justified on linguistic grounds. What evidence is there to suppose that Type 1 suffixes are morphologically structured like compounds? One fact which points in that direction is that Type 1 suffixes, like second members of compounds, can generally be factored out in conjunction: like *Ess- und Schreib-tische* 'dining- and writing tables', we have *zwei- und dreifach* 'two- and threefold', *öl- und erzreich* 'rich in oil and ore', *vor- und rückwärts* 'forward and backward', *König- und Kaisertum* 'kingship and emperorship', *flegel- und stümperhaft* 'boorish and bungling'. Admittedly, this does not seem equally possible for all Type 1 suffixes, e.g. *-heit* and *-lein*; and of course it is possible only when the suffixes are used in a parallel way: **König- und Altertum* 'kingship and antiquity'. But not even under complete parallelism is such factoring out permissible for Type 2 suffixes: **lang- und sorgsam* 'slowly and carefully', *Güt- und Stärke 'goodness and strength', **klapper- und wackelig* 'rattling and shaky'.

A close examination of the suffixes would allow my proposal to be tested in other ways. For example, Chisholm finds some inconsistency in *-bar*, which behaves like a Type 2 suffix in 80% of the cases and a Type 1 suffix in the remaining cases. I would conjecture that the reason is the double function of *-bar* as (a) a lexicalized unproductive suffix, as in *dankbar* 'grateful', *sonderbar* 'strange'; and (b) a productive suffix corresponding to Eng. *-able*, e.g. *trinkbar* 'drinkable', *undenkbar*

'unthinkable', which is factorable (*trink- und essbar* 'drinkable and eatable'). I would thus predict that the bulk of Type 1 cases should be of the latter, productive type, while the bulk of Type 2 cases should be of the lexicalized type.

Russian meter is, like that of English and German, based on stress rather than quantity. A detailed comparison of Russian and English would undoubtedly be highly instructive, judging from the analysis presented in Zhirmunsky 1966. Russian shares MR1 with English. Iambic verse allows spondaic feet if the first position in the foot is a monosyllabic word. Inverted feet require, in addition, that a verse or sentence boundary precede. It is evident that this is a system made up of the same basic elements as English metrics, but assembled in a different way. Variations parallel to those in the English tradition are found; e.g., some 20th-century poets drop the monosyllable condition.

In languages like classical Greek and Latin, we find no analogs to the MR1 and MR2a of English. However, a process comparable to MR2b or 2c does exist. Consider the iambic trimeter of classical Greek poetry, with the basic structure

$$(94) \quad \underset{\smile}{-} \; - \; \smile \; - \; \underset{\smile}{-} \; | \; - \; \smile \; | \; - \; \underset{\smile}{-} \; - \; \smile \; \underset{\smile}{-}$$

Here a word boundary must occur in one of the two places marked by |, viz. either between the fifth and sixth positions or between the seventh and eighth positions. The free choice between strong and weak in the final position is a constant option of Greek (as well as of Latin and Sanskrit) verse of every metrical form. To be distinguished from this neutralization—which seems to be found only in languages with quantitative verse (but in all these?)—is the neutralization in the first, fifth, and ninth positions. This is a characteristic of iambic verse only, and has no counterpart in trochaic verse, where /—/ in the corresponding positions cannot be replaced by /⌣/.

It is well-known that Greek verses containing even numbers of feet have a dipodic internal structure (hence the term trimeter for a six-foot line). We can represent this dipodic internal structure by assuming verse boundaries before each odd-numbered foot, i.e. before positions 1, 5, and 9. (We will want to postulate that the initial boundary is stronger than the internal ones, but this will not be relevant here.) To express the quantitative neutralization of these positions we need the rule

$$(95) \quad \smile \rightarrow \; - \quad \text{after verse boundary}$$

The same rule can be motivated for the Vedic poetry of ancient India—which, like Greek and Latin poetry, is based on the distinction between long and short syllables, and also has verse-initial neutralization of quantity everywhere. This correlates with the fact that Vedic meter is fundamentally iambic throughout (Arnold 1905).

The general impression thus seems to emerge that MR1 and MR2a are characteristic of stress-based metrical systems, whereas MR2b (or 2c) recurs in quantitative meter as well. This fact supports the conjecture that the monosyllable constraint (MR2a) is functionally motivated by its effect of preventing word-internal stress relations from conflicting with meter.

REFERENCES

ARNOLD, E. VERNON. 1905. Vedic metre. Cambridge: University Press.
AUDEN, W. H. 1962. The dyer's hand. New York: Random House.

BEAVER, JOSEPH C. 1971a. The rules of stress in English verse. Lg. 47.486–614.
——. 1971b. Current metrical issues. College English 33.177–97.
BRIDGES, ROBERT. 1921. Milton's prosody. Oxford: Clarendon Press.
CHATMAN, SEYMOUR. 1956. Robert Frost's *Mowing*: an inquiry into prosodic structure. Kenyon Review 18.421–51.
——. 1965. A theory of meter. The Hague: Mouton.
CHISHOLM, DAVID H. 1973. Lexicality and German derivational suffixes: a contribution to the Magnuson–Ryder theory of prosody. Language and Style 6.27–38.
CHOMSKY, NOAM, and MORRIS HALLE. 1968. The sound pattern of English. New York: Harper & Row.
FREEMAN, DONALD. 1968a. On the primes of metrical style. Language and Style 1.63–101. [Also in Freeman 1968b:448–91.]
—— (ed.) 1968b. Linguistics and literary style. New York: Holt.
FRYE, NORTHROP. 1957. The rhythm of recurrence: Epos. In his Anatomy of criticism, 251–62. Princeton: University Press.
HALLE, MORRIS. 1973. Stress rules in English: a new version. Linguistic Inquiry 4.451–64.
——, and J. KEYSER. 1966. Chaucer and the study of prosody. College English 28.187–219. [Reprinted in Freeman 1968b:366–426.]
——, ——. 1971a. English stress: its form, its growth, and its role in verse. New York: Harper & Row.
——, ——. 1971b. Illustration and defense of a theory of the iambic pentameter. College English 33.154–76.
——, ——. 1974. On the theoretical bases of metrical verse. To appear.
HASCALL, DUDLEY. 1971. Trochaic meter. College English 33.217–26.
JAKOBSON, ROMAN. 1960. Linguistics and poetics. Style in language, ed. by T. A. Sebeok, 350–85. Cambridge, Mass.: MIT Press.
JESPERSEN, OTTO. 1933. Notes on metre. In his Linguistica, 249–74. Copenhagen: Levin & Munksgaard. [Reprinted in his selected Writings 647–76. London: Allen & Unwin, 1962. An earlier version was published as Den psykologiske grund til nogle metriske faenomener, Oversigt til det Kongelige Danske Videnskabernes Selskabs forhandlinger, 1900:487–526 (Copenhagen).]
KIPARSKY, PAUL. 1966. Über den deutschen Akzent. Studia Grammatica 7.69–98.
——. 1968. Metrics and morphophonemics in the Kalevala. Studies presented to Professor Roman Jakobson by his students, ed. by C. Gribble, 137–48. Cambridge, Mass.: Slavica. [Reprinted in Freeman 1968b:165–81.]
——. 1972. Metrics and morphophonemics in the Rigveda. Contributions to generative phonology, ed. by M. Brame, 171–200. Austin: University of Texas Press.
——. 1973. The role of linguistics in a theory of poetry. Daedalus, Summer, 231–44.
LANIER, SIDNEY. 1880. The science of English verse. New York.
LEE, GREGORY. 1969. English word-stress. Papers from the 5th Regional Meeting, Chicago Linguistic Society, 389–96.
MAAS, PAUL. 1962. Greek metre. Oxford: Clarendon Press.
MAGNUSON, KARL, and FRANK RYDER. 1970. The study of English prosody: an alternative proposal. College English 31.789–820.
——, ——. 1971. Second thoughts on English prosody. College English 33.198–216.
SELKIRK, LISA. 1972. The phrase phonology of English and French. MIT dissertation.
SIPE, DOROTHY L. 1968. Shakespeare's metrics. New Haven: Yale University Press.
SMITH, BARBARA HERRNSTEIN. 1968. Poetic closure: a study of how poems end. Chicago: University of Chicago Press.
TARLINSKAYA, MARINA. 1973. The syllabic structure and meter of English verse from the thirteenth through the nineteenth century. Language and Style 6.249–72.
WHITEHALL, HAROLD. 1956. From linguistics to criticism. Kenyon Review 18.411–21.
WIMSATT, W. K. 1970. The rule and the norm: Halle and Keyser on Chaucer's meter. College English 31.774–88.

ZEPS, VALDIS. 1963. The meter of the so-called trochaic Latvian folksongs. International
    Journal of Slavic Linguistics and Poetics 7.123–8.
——. 1973. Latvian folk meters and styles. A Festschrift for Morris Halle, ed. by
    S. Anderson & P. Kiparsky, 207–11. New York: Holt.
ZHIRMUNSKY, VIKTOR. 1966. Introduction to metrics. The Hague: Mouton.