Meter and Sentence Stress in English

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Introduction

There have been various attempts at applying phonological analysis of English to the understanding of metrics.[1] In the past decade or so, the principles of generative phonology have revealed new aspects of English versification.[2] Among the various versions of the mertrical theory based on generative phonology, there seems to be a basic disagreement as to what the metrical unit ought to be.

The smallest metrical unit is the foot, which is no larger than a few syllables. Obviously, not all the metrical facts can be explained on the basis of the foot, simply because the linguistic units often go beyond the bounds of a foot: polysyllabic words like *pentameter* and compounds like *elevator operator* require explanations of a longer span than a single foot.

It is natural for a linguist to base his metrical description on a larger, and linguistically more convincing unit. One such unit is what I would like to call a " phonological word." A phonological word is comprised of one lexical item or a "content word" with or without non-lexical items preceding or following it.[3] Word groups such as *a poem, his poetry, by a poet* are all single phonological words.

Beyond this is the unit called the "phonological phrase" defined by

Kiparsky in terms of syntactic units such as Noun Phrase, Verb Phrase, Adjective Phrase, and Prepositional Phrase.[4]   A phonological word may also be a phonological phrase, but the reverse does not always hold: *a great poet* is a single phonological phrase comprising of two phonological words.   The phonological phrase can also be defined as "the part of a sentence between two (potentical or actual) [intonation] breaks."[5] Kiparsky claims that "the metrical facts show that at least that much stress subordination [namely, phonological rules operating within the phonological phrase] is metrically relevant," and that the metrical facts "do not positively support the possibility that there is stress subordination in larger domains such as the sentence or the line."[6]

Both the sentence and the line, however, could be of relevance in a metrical description, since, on the one hand, the sentence stress is significant linguistically, and on the other hand, the line is a metrically important unit.   So far, only a particular part of the sentence stress has been considered in Beaver (1971a), and only passing remarks have been made here and there about the line.[7]

In what follows, I am going to argue that the sentence stress is significant in understanding the metrical nature of a line.

Sentence Stress

It is generally agreed that there are four distinct stresses in English, 1, 2, 3, and 4, from the strongest to the weakest.   This assumption makes it possible not only to clarify word stresses such as in *pentameter* but also the contrast between compounds and phrases such as *a blackbird* versus *a black bird*.

Chomsky and Halle extended the stress description to the sentence level, and set up rules to "generate" sentence stresses. For phrases of a wide range of syntactic structures, there is a remarkable uniformity of the stress pattern 21:[8]

$$
\begin{array}{ll}
\text{Noun Phrase :} & \text{a } \overset{2}{\text{black}} \overset{1}{\text{bird}} \\
\text{Verb Phrase :} & \overset{2}{\text{read}} \text{ the } \overset{1}{\text{book}} \\
\text{Adjective Phrase:} & \overset{2}{\text{eager}} \text{ to } \overset{1}{\text{please}} \\
\text{Subject–Verb :} & \overset{2}{\text{John}} \overset{1}{\text{left.}}
\end{array}
$$

By applying this phrase-level principle to sentences, we can arrive at the sentence-level stress patterns. Take, for instance, the following sentence:

(1)   John read the book.

We already know that the predicate phrase *read the book* has the stress pattern 21, which, as a whole, receives stress 1, while the subject *John* receives stress 2. Chomsky and Halle's "rule" says that as the subject is subordinated to the rest of the sentence, the verb phrase 21 changes into 31. More generally, when a unit is dominant in stress, it retains the unit-internal primary stress, and all the lesser stresses within the unit are reduced in stress by one degree, as shown in (1′):

(1′)   John read the book.

2	1
2	3	1

Crucial to this method is the distinction between the lexical item and the non-lexical item. The lexical item in isolation receives one primary word-level stress and therefore undergoes syntactic stress rules, but the non-lexical item does not receive a primary stress when in isolation and is treated by a separate set of stress rules.[9]

If, in the predicate phrase, we had *read the famous book* instead of *read the book*, then the phrase stress of the predicate must be considered in two steps using the same subordination rule as explained above:

(2)   John read the famous book.

Word stress : 1   1   1   1

Phrase stress:

    Step 1   2   1

    Step 2   2   3   1

The stress pattern for the entire sentence is arrived at after one more step:

(2′)   John read the famous book.

                              2   3   1

Sentence stress: 2   3   4   1

Kiparsky's Metrical Rules

We assume that an iambic foot (one weak stress followed by a strong stress) has the stress pattern of 41. This is called the "basic metrial pattern." Since there are four distinct linguistic stresses in English, the operation of versification, from a linguistic point of view, consists of "assigning" four stresses to the basic pattern 41. There are several formulations for this assigning operation; in this paper, we adopt Kiparsky's formulation.[10]

Kiparsky sets up two rules, one for the strong stress and the other for the weak. The rule for the strong second syllable of the basic pattern says that "a primary stress can be freely replaced by any other stress." On the other hand, in the first or weak position, "we can have a 3 or

stronger stress under two conditions: in a monosyllabic word (condition a), and after an intonation break (condition b)."[11] Because of the remarkable condition (a), Kiparsky' s metrical theory is often referred to as the Monosyllable Theory.

When the basic metrical pattern 41 undergoes the two metrical rules, the result, which is called the " derived metrical pattern," is no longer 41. As long as the two conditions (a) and (b) are met, the derived pattern can, in fact, be any of the sixteen possible combinations as shown in the table below:

Iamb   Spondee

41	31	21	11
42	32	22	12
43	33	23	13
44	34	24	14

Pyrrhic   Trochee

Of these, the combination 11 is the basic pattern of the spondee, 14 is that of the trochee, and 44 is pyrrhic. The combination 41 is the only perfectly iambic combination, all the rest being more or less at a distance from an ideal iambic pattern.

When the derived pattern differs from the basic pattern, whatever the extent of that difference may be, it creates "metrical tension" or "complexity." Since both the basic and the derived patterns are expressed in numerical terms, it is easy to compute the metrical complexty. For instance, $\overset{1}{\textit{black}}\overset{3}{\textit{bird}}$ occurring in an iambic foot is said to have the complexity of 5: when the basic and the derived patterns are compared, the first position has a gap of 3 and the second, a gap of 2, the sum being 5. As the complexity of a line grows, the basic pattern is obscured prog-

ressively. In the famous line in *King Lear*:

Never, never, never, never, never! 5.3.308

the complexity is 3 on each syllable; the entire line is ten times 3 in complexity. "Normally, a tension of about 15 already makes the underlying [i.e., basic] pattern hard to grasp and approaches the upper limit of tolerable metricl complexity in English poetry."[12]

The derived pattern is not a direct reflection of recited utterances, but rather "the natural rhythm of speech" or a reflection of "the normal stress rules of the language."[13] The task of a linguistic analysis of verse is to describe the relationships between the basic pattern and the derived pattern. How the derived pattern is interpreted in an actual reciting performance is of little concern to a linguist.[14]

Sentence Stress in Metrics

With all of this in mind, I read *King Lear*. The rest of the paper is mostly based on lines from that play.

If we take the smallest phonological phrase as our unit of analysis, the line below divides into four phrases as shown by slant lines:

(3) And / in the end / meet / the old course of death 3.7.100

All the potential intonation breaks are included in this marking.[15] Since each phonological phrase is considered to have one primary stress (except when the phrase lacks a lexical item as in the first phonological phrase in (3)), there are three primary stresses in this line:

(3') And / in the end / meet /the old course of death

This derived pattern is assigned to the basic pattern as follows:

(3") And in / the end / meet the / old course / of death

We notice that the verb *meet* creates a complexity of 3 in this line.

Now, look at the following line, again with phonological phrases separated by slant lines:

(4)   We'll / no more / meet, / no more / see / one another   2.4.46
           1   1   1   1   1

To the verb *meet* here, the phonological-phrase analysis will give the same degree of stress 1 as in the previous case. But this time, the verb is in a metrical stress position, and therefore, the complexity in this syllable is zero:

(4′) We'll no / more meet, / no more / see one / another
              1   1   1   1   1

The analysis based on the phonological phrase leaves things just at that stage.   It leaves unexplained the fact that the verb is less stressed in (3) than in (4), not because the metric structure forces us to "tilt"[16] the stress on *meet* in (3), but because "the normal stress rules of the language" require that the verb be subordinated to its direct object.   If this rule of the language is to be applied in (3,) we must either alter the definition of the phonological phrase, or we must bring sentence stress into consideration.   We will take the first alternative first and assume that in (3) the phonological phrase is not *meet / the old course of death* but / *meet the old course of death*/.   In that case, the definition of the phonological phrase must be altered to exclude one potential intonation break. If,in restricting the occurrence of that phonological phrase boundary, a statement is required to the effect that a phonological phrase boundary never occurs between a verb and its direct object, then that restriction is purely syntactic.   Alternatively, the phonological phrase can be defined as multi-leveled, so that *meet, the old course of death,* and *meet the old course of death* will all be phonological phrases, the first two on one plane, and the third on a second.[17]   This resembles in its consequenes the

sentence-stress solution, except that a full sentence such as *We'll no more meet* still does not come into the scope of analysis.

Reconsider (3) in terms of sentence stresses. The verb *meet* is part of the verb phrase *meet the old course of death*. The verb, then, receives a secondary stress vis-à-vis the object phrase:

(3''')   meet the old course of death
          1   1   1   1

                   2   1

                   3   2   1

          2   4   3   1

Thus the complexity on the syllable *meet* becomes 2 instead of 3. This, by itself, may seem to be a minute point, but the theoretical consequences of this are not to be overlooked.

First of all, it is useful to separate the two planes of analysis: beyond the phonological phrase is the syntactic phrase. In the particular lines under discussion, the phonological-phrase stress on *meet* creates a maximum tension in (3) and no tension at all in (4). On the syntactic level, however, that tension in (3) is alleviated as in (3'''), while in (4), the regularity of meter is reinforced by sentence stress.

In the second place, the phonological-phrase analysis as in (3') and (4) creates phonologically unlikely sequences of primary stresses, which can only be normalized in terms of syntactic phrases.

The Role of the Sentence Stress

To illustrate further the advantage of utilizing syntactic stresses, we will take the following line as an example:

(5)   Here stood he / in the dark, / his sharp sword / out 2.1.77

The line is divided by a comma into two single sentences. The second one is transformed and does not look like a full sentence on the surface; nevertheless, it is a single sentence. We must consider sentence stresses separately for the two parts of the line.[18] For the first half of the line, the phonological-word analysis assigns three primary stresses, which are reanalyzed on the plane of phonological phrases as follows:

(6)   Here stood he in the dark

    a.   Phnological word :   1 / 1   /   1

    b.   Phonological phrase : 2   1   /   1

The metrical complexity is 2 on the first syllable, and with that the phonological-phrase analysis stops. The sentence stress analysis, however, adds one more step to it :

(6′)   .   Here stood he in the dark

    Sentence stress :   3 . 2   1

The first two syllables have one degree of complexity each, the sum being the same 2 for the sentence as in the phonological-phrase analysis. This seems to lead to an interesting implication, but we will first look at the second half of the line :

(7)   his sharp sword [was] out

    a.   Phonological word: 1 / 1   /   1

    b.   Phonological phrase: 2   1   /   1

We notice that in this analysis, the line contains a sequence of 11 again. This is phonologically unlikely unless the intonation break actually occurs for some reason, or unless the word *out* was in contrast (which is not the case here) as in a hypothetical line:

       With his sharp sword in, and his sharp sword out

The unnaturalness of the phonological-phrase analysis is easily corrected on the syntactic plane as in (7'):

(7')   his sharp sword [was] out

     Sentence stress: 3   2   ·   1

The metrical complexity in *sharp sword* is 4 both in the phonological-phrase analysis and in the sentence-stress analysis. Interestingly, however, the complexity 4 is divided into 1 and 3 in the former analysis, and into 2 and 2 in the latter; much as it was in the first half of the line, the same degree of complexity is evened out onto two syllables on the sentence level.

A reverse of this situation would be seen in a line where the phonological-phrase analysis finds no complexity but the sentence-stress analysis does. There is such a case in a passage from *Antony and Cleopatra*:

(8)   By the fire

          That quickens Nilus' slime, I go from hence

          Thy soldier, servant, making peace or war

          As thou affect'st.   1. 3. 68–71

Kiparsky states that this passage is of zero tension and is still not doggerel because of its "considerable variety of rhythm . . . introduced by syntactic means."[19] But his phonological-phrase analysis is equipped with no mechanism for clarifying that considerable variety of rhythm. If these lines are divided into single sentences, and if sentence stresses are assigned to each of them, the "variety of rhythm" is easily reflected in terms of tension as follows:

(8')   a. By the fire that quickens Nilus' slime

     Sentence stress: 2   3   4   1

     Complexity   :   1   2   3   0

b. I go from hence

Sentence stress: 2   1

Complexity   :   1   0

c. Thy soldier, servant, making peace or war

Sentence stress: 2   2   3   1   1

Complexity   :   1   1   2   0   0

d. As thou affect'st

Sentence stress: 3^{20} 1

Complexity   :   2   0

The tension as computed above is relatively low but not zero in any of
the four sentences. Thus it seems profitable to have a double-tiered
system: the tension can be computed first on the basis of the phono-
logical phrase to reflect the fact that these lines are unusually regular
metrically, and then, on the sentence level, the judgment that this is not
doggerel is expressed in terms of sentence stresses.

It is also interesting to notice that the dying Lear's "Never, never,
never, never, never !" which is maximally complex, has no sentence-level
stresses, not even phonological-phrase stresses, but just word stresses. It
is to be noted that word lists have no phrase or sentence stress mecha-
nisms either to reinforce their metrical regularity, or to alleviate the
tension, created by word stresses:

(9) Arms, arms, sword, fire ! Corruption in the place !   3. 6. 54

These facts lead us to a realization about the role of sentence stress
in metrics, namely that sentence stress creates tension in relatively regular
lines such as (8), and at the same time plays a stabilizing role in more
complex lines such as (3). In a great number of lines I looked at, in
which there were sentences of various types, I noticed that the primary

sentence-stress always falls on a metrical stress position. Take, for instance, the two lines (3) and (4) again. The verb *meet* in (3) has a syntactic secondary stress and occurs in a metrical non-stress position. In (4), on the other hand, the verb *meet* receives a primary sentence-stress and occurs in a metrical stress position. In (5), if we take analysis (7'), the noun *sword* receives a secondary sentence-stress and is found in a weak position. In contrast, the same noun *sword* in (10) below receives a primary sentence-stress and appears in a metrical stress position:

> (10) In cunning I must draw my sword upon you   2. 1. 30
>   2   1

It can, therefore, be argued that the primary syntactic stress coinciding with a metrical stress position is what fixes the entire line into the metrical frame. The rest of the sentence stresses may or may not appear in metrical stress positions. If they do, the line becomes more regular and less complex metrically, as does (8); if they do not, metrical complexity grows, but the meter is not destroyed, thanks to the primary sentence-stress, which stays in a metrical stress position. Word lists lack this mechanism.

In conclusion, we seem to gain various advantages and no disadvantages by adding a distinct plane of sentence stresses to the analysis of meter.

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Footnotes

1. Examples of the structuralist approach based on Trager-Smith phonology are seen in Whitehall (1956) and Chatman (1956a) and (1956b). Much earlier, Jespersen (1933) developed a relativist theory of meter, which was reformulated with con-

siderable addition by Halle and Keyser (1966) and (1971). Ransom (1956) and Stein (1956a) and (1956b) criticize Whitehall and Chatman's linguistic approach to meter, and Wimsatt (1970) criticizes that of Halle and Keyser, thereby presenting the traditional approaches to the question.

2.   There are, at present, three major formulations of the generative theory of metrics: (1) Halle and Keyser's, (2) Magnuson and Ryder's, and (3) Kiparsky's. Besides these, there is Beaver's discussion of particular details of sentence stresses in connection with metrics.

3.   Technically, the word boundary rules fomulated by Chomsky and Halle (1968) and by Selkirk (1972) define the phonological word as X in ## X ## where X contains no ## and where # represents a word boundary.

4.   Kiparsky's definition of the phonological phrase boundary is #[# where a square bracket represents an opening boundary of a syntactic phrase.

5.   Kiparsky (1975), p. 582.

6.   Ibid., pp. 583f.

7.   Kiparsky, for instance, discusses the line in terms of phrase boundaries. See Kiparsky (1975), pp. 598ff.

8.   Chomsky and Halle (1968), pp. 15ff.

9.   Stresses of non-lexical items are discussed in greatest detail and clarity by Selkirk (1972). A non-lexical item may receive a stress depending on the environment in which it appears, but never a primary stress.

   The distinction between lexical and non-lexical items is much like that between "content words" and "function words". A lexical item is dominated by one of the "major categories," i. e., noun, verb, adjective, or adverb.

10.   See footnote 2.

11.   Kiparsky (1975), p. 583.

12.   Ibid., p. 584.

13.   Ibid., p. 580, under (B).

14.   The differentiation between the basic and the derived patterns on the one hand, and between the derived pattern and the reciting performance on the other, is a major contribution of the generative approach to metrics.

15.   Some potential intonation breaks are less likely to occur in an actual utterance than some others. For instance, the ones after *meet* in (3) and *We'll* in (4) are more potential than actual when compared with those after *end* in (3) and *meet* in (4).

16. When the derived pattern differs from the basic pattern, a performer may try to accommodate the basic pattern by more or less altering the normal speech rhythm. This is referred to as "tilting" by Wimsatt (1970).

17. This, in fact, is what Kiparsky (1975) seems to intend.

18. What exactly is the single sentence for phonological purposes such as ours must be explored more in detail. In this paper, sentences like *John wants to go* and *John wants Mary to go* are considered single sentences, while sentences like *John thinks that George wants Mary to go* would be divided into two single sentences, *John thinks* and *George wants Mary to go*. This mechanism allows us to divide (4) into two sentences also: (a) *We'll no more meet,* and (b) *[We'll] no more see one another.* This way we avoid the problem inherent in Chomsky and Halle's sentence-stress rules. According to their rules, when the sentence becomes more complex, the deeply embedded ones will have to be assigned progressively weaker stresses. For instance, in *I know that John read the famous book, John read the famous book* is subordinated to *I know,* so that the original stress patten 2341 on *John read the famous book* changes into 3451 and in *Tom claims that Mary knows that John read the famous book,* it would be 4561, etc.

19. Kiparsky (1975), p. 584, footnote 2.

20. Pronouns are non-lexical and receive 3 or weaker stress by Selkirk's rules.

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