Towards a Case for Isochronous Verse

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The notion that the rhythms of poetry in English can be something other than syllabic rhythms is not really new, dating, at least, from Thomas Campion, being echoed by Samuel Taylor Coleridge and Sidney Lanier, occurring as "sprung rhythm" in the poems of Gerard Manley Hopkins, and recurring frequently among the modern poets, including William Carlos Williams' concept of the "variable foot."

And linguists have, at times, worked with the notion of non-syllabic rhythms in poetry in English. For example, in "Towards a Formal Poetics: Metrical Patterning in 'The Windhover'," Charles Scott demonstrates that Hopkins' "sprung rhythm" is not alliterative, in the same sense that Old English poetry is alliterative, and that it is not strictly formulated in the iambic tradition, rather, Scott finds that Hopkins' poem is a blending of the two traditions in English poetry, and that "The Windhover" is, at least in part, isochronous.

However, not all linguists agree that Hopkins' rhythms are isochronous—or even that isochronism exists. David Crystal, for example, in his Prosodic Systems and Intonation in English, tends to discredit the concept of isochronism. "Clearly," he writes, "if one means by isochrony a direct perception of regular peaks of prominence running through all the utterances of an individual, then English is not isochronous" (162). And Crystal continues to discount the concept of isochronism, seemingly, more than anything else, upon the strength of the argument presented by Yao Shen and Giles G. Peterson in their Isochronism in English.

The Shen/Peterson monograph is the report of an inquiry into the nature of and into the very existence of isochronism in English, and in the conclusion of the study, they write "we did not find isochronism in our limited data and therefore cannot say that there is isochronism in English" (24).

Although the Shen/Peterson monograph discounts isochronism in English, the criteria by which they establish and control their study are questionable. In essence, they establish the boundaries of the "supposed" isochronous units at the beginning of a syllable containing a primary stress and at the end of the syllable pre-
ceding the next primary stress—

\[ \text{[nɪˈlɪz ˈzɜː ˈvɜːrɪ ˈlɜː्रɪ] measured} \]

with the measured unit marked by the bracketing beneath the sentence (33)

The Shen/Peterson criteria for the determination of the boundaries of the "supposed" isochronous units are based primarily upon three statements, all similar, by Kenneth Pike, and upon an analogous statement from Harold Whitehall's and Archibald Hill's "A Report on the Language-Literature Seminar." All three of Prof. Pike's statements, which provide the core from which the Shen/Peterson criteria are developed, are similar to the following statement from Pike's *The Intonation of American English*:

The timing of rhythm units produce a rhythmic succession which is an extremely important characteristic of English phonological structure. The units tend to follow one another in such a way that the lapse of time between the beginning of their prominent syllables is somewhat uniform (34).

-- and the Whitehall/Hill statement reads "the amount of time between two primary stresses tends to be the same, irrespective of the amount of material between them" (490).

The Shen/Peterson monograph relies heavily upon these statements of tendency and converts them into absolutes which, in turn, become the criteria for the determination of the boundaries of the "supposed" isochronous units.

First, there are three essential factors. They are 1) Two primary stresses. The first one marks the beginning of the time span to be measured, and the second marks the end of it. 2) One terminal juncture. This juncture occurs between the two primary stresses. 3) A time span. This is the time interval between the first and second primary (13).

However, strict adherence to those criteria seem to lead to certain infeasible readings, as in the example below.
\[ \text{toj} + \ddot{\text{o}} + [\text{kahr} / \text{broy} + \text{and} + [\text{ign's} + \text{ty} + \text{d}] \]

in which a terminal juncture is placed at mid-word (30)

If the statements of tendency were the only statements made by Prof Pike and by Prof Whitehall and Prof Hill, then it might be conceivable to have formulated the criteria for the determination of the boundaries of the "supposed" isochronous units as they were formulated in the Shen/Peterson monograph. However, the statements of tendency do occur within contexts which are totally disregarded in formulating the Shen/Peterson criteria for the determination of boundaries. For example, the Whitehall/Hill paper stipulates specific boundaries for the isochronous units. "We believe that a language having characteristics like English will most necessarily create a metrical form in which what is counted is the number of strong stresses, and in which the number of weak stressed syllables is irrelevant. The whole of the material will be further arranged into juncture units" (491). That is, the boundaries of the isochronous units are not primary stresses, but are junctures instead. And the statements by Prof Pike, statements which completely surround the statements of tendency cited in the Shen/Peterson monograph, also stipulate that the boundaries of the units are junctures, not primary stresses.

English sentences are spoken with recurrent bursts of speed, with long or short pauses or with intonation breaks between. A sentence or part of a sentence spoken with a single rush of syllables uninterrupted by a pause is a RHYTHM UNIT (1945 34)

Prof Pike continues his description of the rhythm unit, citing specific examples of the single rhythm unit--

the car
intonation
here it is
he said he would
a jumping jack (1945 34)

--and with examples of utterances which break into two rhythm units--

I want to go but I can't
If he comes he'll buy it
every day is Pepsodent day (1945 34)
And if the examples of the single and double rhythm units are marked for primary stresses and terminal junctures--

the car

intonation

here it is#

he said he would#

a jumping jack

I want to go // but I can't#

If he comes // he'll buy it#

every day // is Pepsodent day#

--each simple rhythm unit contains one and only one primary stress, and the primary stress is not restricted to any single position inside the unit, and each simple rhythm unit has boundaries which occur simultaneously with a terminal juncture. And the plus juncture neither begins nor ends a simple rhythm unit.

In addition to describing the simple rhythm unit in terms of stress and juncture, Prof Pike also describes the rhythm unit in terms of pitch contour. "A rhythm unit which contains one, and only one, primary contour is a SIMPLE RHYTHM UNIT"

the university

3- 02- -4 //

Robert must do it

02- -4 // (1945 34)

In addition to establishing the boundaries of simple rhythm units in terms of stress, pitch, and juncture, Prof Pike makes other observations about the nature of the simple rhythm unit.

(1) "Words in very close grammatical association are likely to belong to the same rhythm unit"

the boy

3- 02-4 //

He's gone

3- 02-4 //
(2) "Words which have no innate lexical stress tend to join that rhythm group preceding or following them with which they are grammatically most closely related.

I'm going to, tomorrow
\[
3- \quad 0^2- \quad -3/ \quad 3- \quad 0^2-4 \quad // \quad (1945 \ 35-36)
\]

He gave it to the man
\[
3- \quad 0^2- \quad -3/3- \quad 0^2-4 \quad // \quad (1945 \ 36)
\]

Whom did you tell it to yesterday?
\[
0^2-3/3- \quad 0^2- \quad -3/0^2- \quad -4 \quad // \quad (1945 \ 36)
\]

(3) "The beginning of any simple rhythm unit almost always coincides with the beginning of a word" (1945 36)

(4) "The beginning of a simple rhythm unit tends to coincide with the beginning of a total contour, whether the total contour begins with a precontour or begins directly with a primary contour, as in

the boy and Don't
\[
3- \quad 0^2-4// \quad 0^2- \quad // \quad (1945 \ 36)
\]

(5) "The ending of a simple rhythm unit tends to end coincidentally with some word" (1945 36)

(6) The ending of a simple rhythm unit also occurs "at that place where some primary contour is ending at the same time" (1945 36)

The criteria which Prof. Pike describes for the determination of the boundaries of the "simple rhythm unit" are those criteria which must be used to determine the boundaries of isochronous units, if isochronous units do indeed exist in poetry in English. However, if it is to be said that isochronous rhythm units do exist in poetry in English, then the elapsed reading times for successive simple rhythm units, successive isochronous units, must be essentially the same.
For purposes of testing the criteria set forth by Prof. Pike, for establishing the boundaries of simple rhythm units, for the boundaries of isochronous units, and for purposes of demonstrating the feasibility of isochronous rhythms in poetry in English, two readers were asked to read Gerard Manley Hopkins' "Pied Beauty"—and their readings were taped. Using the readings as the basis for marking the poem, the poem was marked for primary stresses and junctures in such a manner as to conform to all ten criteria set forth by Prof. Pike for the determination of the boundaries of a simple rhythm unit: each unit (1) was delivered "as a single rush of syllables uninterrupted by a pause", (2) was bounded on either end by a terminal juncture, (3) contained one and only one primary stress, (4) contained at least one syllable, with the total number of syllables occurring at random, (5) contained one and only one primary pitch contour, (6) contained words in close grammatical association, (7) began at the beginning of a word, (8) began at the beginning of a total pitch contour, (9) ended with the ending of a word, and (10) ended with the ending of a primary pitch contour.

The taped phrases were then played into a Tektronix, type 565, dual-beam oscilloscope, and a Polaroid camera (timed exposure at f 2.8, with type 107 film) was used to produce oscillograms. The sweep of the oscilloscope was set at 2.0 seconds, producing a total time lapse for the oscillogram of 200 centiseconds, each major division of the oscilloscope grid recording 20 centiseconds elapsed time, and the minor divisions of the grid recording 4 centiseconds elapsed time.

The poem, as it appears below, is marked for stress and juncture as per Prof. Pike's criteria. The numbers appearing above each line indicate the succession in which the marked phrases occur in the poem, and the sequence in which they were measured. The square brackets appearing below the line mark the outside limits of the measured phrase, and the number immediately below the phrases and interrupting the square brackets indicate the elapsed time as measured for that phrase from the tape of the first reader.

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(1) Glory be to God, for dappled things //
    100

(2) //

(3) For skies of couple-colour, as a brinded cow //
    104  100

(4) //

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The poem itself is divided into three sentences, the first ending with phrase 14, the second with phrase 26, and the final phrase 27 is the final sentence. The original intent, for purposes of demonstration only, was to time the phrases in the first sentence of the poem. However, when the phrase timings for the first sentence were completed, the difference between the elapsed time for phrase 14 and the other phrases of the sentence was so great that the phrases were retimed—with the same result. Consequently, the final phrases of the second sentence were also timed and, again, the elapsed time for the final phrase of the sentence was substantially longer than the elapsed time for the other phrases, but essentially of the same duration as phrase 14—perhaps, signaling the end of the sentence, since the two phrases which terminate the sentences constitute the only major deviations for reasonably consistent timings for the phrases within the sentences.

Elsewhere in the first sentence of the poem, the elapsed times for the reading of consecutive phrases remains exceedingly close, with a variance of only six centiseconds between the elapsed times for phrases 10 and 11 being the greatest, with phrases 1, 2, 4, 8, and 9 all having an elapsed reading time of 100 centiseconds, and
with the elapsed reading times for any other two consecutive phrases varying no more than two to four centiseconds.

Relatively few phrases from the second reading were timed, yet the timings reflect an isochronous reading of the poem's phrases.

**TABLE**
(all times recorded in centiseconds)

<table>
<thead>
<tr>
<th>Phrase No</th>
<th>Elapsed Time Reader 1</th>
<th>Elapsed Time Reader 2</th>
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<tr>
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The second set of timings also reflects another aspect of isochronous rhythms though the elapsed times for reading individual phrases vary from the first reader to the second reader, both readers are consistent in an isochronous rendition of the poem's phrases. In other words, different readers may read the isochronous rhythms of a poem at different rates of speed, but the elapsed times for consecutive phrases are consistent with each reader.

The data presented here is sparse, yet demonstrative; however, the data does establish a proper set of criteria for determining the boundaries of isochronous units in poetry in English. And above all, the data demonstrates the existence of isochronous
rhythms in poetry in English

And, perhaps, the criteria outlined in this paper will lead to further investigations into the nature of isochrony, into the relationships between the shape of the poem (or prose) on the printed page and rhythmic readings, into the rhythmic relationships between poems written in the iambic tradition and those written in the tradition of free verse, and, perhaps, even into the relationship between muscular rhythms in the production of speech and the rhythms of poetry

NOTES

1Also see Pike 1945 35, Pike 1947 13a, and Shen 1962 5

2Hopkins' poem was elected because both Scott (1974) and Hill (1966 6-18) work with Hopkins' rhythms, but without supplying electronic data to support their claims of isochronous rhythms.

3For variant numbers of syllables to be read in essentially equal elapsed times, an utterance in English would have to be subject to compression (or stretching) with respect to elapsed times and such has been conclusively demonstrated by Lehiste 1971 and 1973.

4The timings reported in this paper were made in the Physics Department at the University of North Carolina at Charlotte, with technical assistance from Bill Melton, Asst Prof of Physics.

5David Abercrombie (1971 19-20) asserts that speech rhythms (and the reading of poetic rhythms) in English is directly correlated with the muscular rhythms of speech production, even in silent reading.

BIBLIOGRAPHY


