RHYTHMICAL STRUCTURES IN POETRY READING

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ABSTRACT
Our study is concerned with the reading of metrically structured verse. We find an apparent tendency of an integration of pauses within and across verse lines to maintain a rhythmical continuity of mean interstress intervals. Similar rhythmical traits have earlier been found in prose reading but with a greater variability of the duration of boundary spanning intervals. Meter specific temporal patterns of strong and weak syllables have been found to comply with expectations. Thus, a main difference between realizations of iambic and trochaic patterns is that the former are less rhythmic as well as prosodic points of view. Consequently, in order to investigate the rhythm in poetry reading, we need to use both methods from the literary metrical analysis, starting out from syllables that form metrical feet, and methods from the analysis of the natural prosody of language with a segmentation into interstress intervals, in Swedish headed by stressed vowel onsets. These we refer to as phonetic feet. The major problems of the present study are the following:

(1) To what extent is isochrony maintained in reading?
(2) How do pauses within and between lines maintain a rhythmical continuity?
(3) What are the characteristic features of trochaic and iambic patterns as they appear in reading? Are weak and strong syllables in an iambic foot (weak + strong) different from those in a trochaic foot (strong + weak)? If so, to what extent are these differences attributable to metrical grouping effects, and to what extent are they implicit in meter specific word and syllable structures?

1. INTRODUCTION
Rhythm in the reading of a poem may be looked upon both as a literary and as a linguistic phenomenon. The analysis must handle aspects and tools from metrical as well as prosodic points of view. Important are the concepts of meter and rhythm. Today metrists try to distinguish between meter and rhythm in poetry. Meter is the abstract, pure pattern of the alternation of weak and strong syllables. Rhythm in poetry, then, is the product of a delicate interplay between this abstract pattern of meter and the normal rhythm of language in prose. Thus, in the reading of a poem, meter can only be realized in an incomplete way because of the resistance natural language makes when it will accommodate itself to the regular pattern of the meter. This also implies that the natural prosody of language can be more or less perturbed when it is squeezed into the metrical scheme. As a result a tension appears - often very fruitful - between the meter and the rhythm of language, [4, 5, 1].

Consequently, in order to investigate the rhythm in poetry reading, we need to use both methods from literary metrical analysis, starting out from syllables that form metrical feet, and methods from the analysis of the natural prosody of language with a segmentation into interstress intervals, in Swedish headed by stressed vowel onsets. These we refer to as phonetic feet. The major problems of the present study are the following:

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2. EXPERIMENTAL PROCEDURE
We have approached the problems outlined above in three steps. One is through sequences of nonsense syllables representing prototype iambic and trochaic rhythmical patterns. The next step was to construct "lab poems" of strict iambic and trochaic meter, based on almost the same word material, enabling a minimal contrast in composition. Finally we turned to the study of traditional Swedish poetry. Such an analysis gave similar results. They were disregarded as a less reliable basis for the study of rhythmical structures.

3. RHYTHMICAL COHERENCE

We shall here report on some of the main results. A more detailed account will be given in [2]. The issues of isochrony and rhythmical coherence of pauses are illustrated in Fig. 1, which pertains to a three-line iambic "lab poem":

"Nu värdes vind dår fram med lust, tills liv och glädje läng och dans och väcker juva minnes bild.
Each line contains four feet of the metric structure W+S. However, for the purpose of bringing out a regularity of interstress intervals the foot text included below. Two versions are included, a normal reading and a scanned reading. One may observe that interstress intervals tend to vary in length with the number of associated phonemes. This is less so in the scanned reading. In the normal reading mode the regularity of syllable sequences, implied by the meter, limits the variability of foot durations and hence of some degree of isochrony compared to prose reading. All the same we occasionally encounter large local variations of foot lengths. Pauses occurred at all line junctions of the "lab poem", Fig. 1. The interstress intervals, from the vowel onset of the last stressed vowel in one line to the onset of the first stressed vowel in the next line, are prolonged by about one mean interstress interval. The pause absorbs a silent beat. Accordingly, the line junction spanning feet have been divided into two parts of equal duration placed at the end of one line and at the beginning of the next line, which brings out the rhythmical continuation.

The same tendency of rhythmical coherence across pauses was observed in the reading of traditional Swedish verse and with greater consistency than in prose reading. Our most detailed data are from two poems, the trochaic "Näcken" (The Water Sprite) by E.J.Stagnelius and the iambic "Kung Karl" (King Charles) by E.Tegnér. The trochaic poem contains five stanzas, each of four lines of four feet each. Most of the pauses occurred at line and stanza junctions. Pause spanning interstress intervals formed a regu-
lar pattern of preferred durations of approximately m=1.2,3,4 or 5 times a quantal module of To=525 ms. Out of the 21 occurrences of an extra weak syllable (hypertacteleic) at the end of each odd numbered line, pauses were generally shorter after the odd lines than after even numbered lines, which tended to secure an overall regular timing of all line junction spanning interstress intervals to approximate 2Ta. In other words, at the end of the odd lines the pause acts as a supplement to the hypertacteleic, completing a foot. In the even numbered lines the pause alone adds a silent foot. The concept of rhythmical continuity across a pause or a line junction can be given two slightly different formulations. One is an invariant of a measure of pause duration plus the associated prepause final lengthening, which tends to approximate the To of aTa. This seems to hold rather well for rhythmical reading of prose. In poetry, on the other hand, we found a more consistent trend of the entire spanning interstress intervals to comply with a measure of mTo. This is what we could expect from a higher demand for rhythmical regularity in poetry reading. In a situation where To=Ta and both models fit the data, we can expect m=1, i.e. one metrical unit is contained in the physical sound segments of the spanning foot.

4. METER SPECIFIC PATTERNS

Our next problem has to do with rhythmical patterns of read poetry in relation to metrical patterns. If the W of the iamb of 355 ms is longer significantly from the W of the trochee of 225 ms, then the trochaeic version would be the case for the S of the iamb and the S of the trochee, the sole difference would be whether a line started with a strong or a weak syllable. Also, if the W/S syllable ratio is larger for iambic than for trochaic verse. This we have verified in the reading of our "lab poems" where an iambic version has the same text as the corresponding trochaic version with a weak syllable added. However, these readings merely demonstrate that consistent, meter specific patterns could be produced, but they do not have a general proof value concerning the independence of stress patterns from prosodic modules. The reading of true poetry the situation was different. The subject was a trained reader but lacked any preconcept of a specific meter imposed rhythm. However, the results from these readings supported our expectancy. We found that the duration of the strong syllable in the iamb, S=375 ms, was only slightly longer than the S=355 ms of the trochee. A great difference was found in the weak syllables with W=150 ms for the iamb compared to W=225 ms for the trochee. However, it is important to consider that this in part reflects differences in syllable complexity. The average number of phonemes per weak syllable was 2.55 for the trochee and 2.15 for the iamb. The average duration of a syllable is approximately proportional to the number of phonemes, [3]. About half of the 75 ms difference between the W of the trochee and the W of the iamb is, thus attributable to the difference in syllable complexity, whilst the remaining 35 ms represents a true meter determined effect. The difference in strong syllable duration comparing the iamb and the trochee may entirely be explained by the slightly higher average number of phonemes in the iambic S than the trochaic S. The main duration difference thus lies in the weak syllable, which is shorter in the iamb than in the trochee.

How do we explain these differences? First of all, the durational patterns we have found merely constitute one part of a complex pattern also carried by intonation and intensity contours that contribute to the lively character of an iambic and trochaic version of the reading of our "lab poems" where an iambic version has the same text as the corresponding trochaic version with a weak syllable added. However, these readings merely demonstrate that consistent, meter specific patterns could be produced, but they do not have a general proof value concerning the independence of stress patterns from prosodic modules.

We have five major areas of temporal organization. One is the tendency of pause and line spanning interstress intervals to synchronize on a multiple of a basic rhythmical module close to W/S of the iambic foot interval. In prose reading similar rhythmical traits were observed, but here the pause plus prepause lengthening is a more stable unit than the duration of the pause spanning interstress interval which varies with the number of phonemes contained. The other main problem concerns meter specific rhythmic patterns. The strong syllable in trochaic verse of about the same length in iambic and trochaic verse, whilst the weak syllable is significantly longer in trochaic verse than in iambic verse, a consequence of a smaller number of phonemes in the weak iambic syllable. The remaining difference could also in part be related to other meter specific selections of word and accent types. However, the durational patterns we have observed appear to reflect a specific grouping of a metrical foot with a poetic mode of reading, e.g. the relative liveliness of the iamb. In this respect we may claim that specific iambic and trochaic patterns are not "metrical myths" [6], but realities as proposed by earlier investigators, [7],[8]. A large number of problems remain to be tackled, e.g. the integration of other stress attributes such as pitch and intensity variations into a metrical model of poetical performance. Now, in the age of free verse these problems might seem antiquated. However, there is a recent trend in poetry writing of rediscovering the poetical virtues of metrical structures.

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References