

Metrical Phonology in Modern English Poetry

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Abstract

One of the main aims of Metrical Phonology Theory (MTT) is to provide the stress of poetry on the syllable, the foot, and the phonological word levels. Analyzing poetry embodies one of the most prominent and controversial metrical issues as the subsumed number and types of syllables, feet, and meters are balanced compared to other literary texts. The MTT saw the light during the late seventies (1975) and (1977) by Liberman and Prince, who produced it as part of non-linear phonology. Its roots originated in prosody, which studies poetic meter and versification. The basis of the metrical analysis is the prosodic analysis developed in London by Firth and his students in 1950. This study aims to identify the values of five metrical parameters in modern English poetry. To achieve this aim, the first five lines of Tennyson's poem 'The Charge of the Light Brigade' are decided to pass through by examining the five metrical parameters along with [Pearl et al. \(2009\)](#). These five parameters are: Quantity Sensitivity, Extrametricality, Foot- Directionality, Boundedness, and Foot- Headedness. The drawn conclusions have shown: Quantity Sensitive, Extrametrical, Foot- Directionality- Left, Bounded, and Foot- Headed- Left values.

Keywords: Metrical Phonology Theory, Prosody, Metrical Parameters, and Modern English Poetry.

Introduction

In the late seventies (1975-77), [Liberman and Prince](#) brought MPT to the light as a part of non-linear phonology. The phonological strings are embodied hierarchically by MPT using the notion of the segment, syllable, foot, and word ([Khalifa, 2017: 78f](#)). Advocating the term metrical phonology (MP) is attributed to the terminology and many other notions that have been borrowed by relying on the study of a poetic meter ([Archibald, 1993: 34f](#)). The roots of MPT are available in prosody, which studies poetic meter and versification; prosody is taken from the Greek word (Prosodía), signifying its musical accompaniment of words. Prosody is the umbrella covering rhythmical patterns, rhyming schemes, verse structure, and prosodic features like stress and intonations. Having extended nature is the easily distinguished hallmark of prosody (Fox, 2002: 1 and Trask, 1996: s.v. prosody). According to Trask, prosody has narrow and broad interpretations. Within the former, the phonological variations in stress, pitch, and intonation are the aim of prosody. In contrast, within the latter, the phonological variables can be explained in relation to a domain larger than a single segment (a suprasegmental domain) are captured by prosody. Language's metrical and temporal organisations are included in the broader interpretation (Ibid).

Metrical analysis is based on prosodic analysis and was developed in London by Firth and his students in 1950. The study considers the syntagmatic aspects of phonology rather than the paradigmatic ones. Even features of a single segment have been dealt with as prosodies if their presence can be associated with an aspect of the syntagmatic structure. Carr (2008) uses the term 'prosody' to indicate phonological elements that are later associated with non-linear approaches like MPT (Carr, 2008: s.v. prosody). Catford has referred to prosodic characteristics as 'suprasegmental features' since they connect individual segments to stretches of speech-continuum (2001:163). The abstraction of prosody is accomplished above the level of phonematic units relying on its higher level of function, which typifies and synthesizes language structure. Such a higher function of prosody can capture a feature like stress which may not be given to a single position regardless of others in the metrical structure. This sort of prosody is labeled as extensional prosody. Depending on Firthian prosody, prosodic function is mirrored in the horizontal and vertical phonological aspects. Alternating rhythm is shown horizontally, but the degree of stress which is not specified to one place in a string is presented vertically (Ball et al., 2010: 116).

"Sounds and Prosodies," which came out in 1948, was the first time Firth put his phonological ideas into writing. It showed how prosodies like stress are related to phonological parts like a syllable or a word (Chapman and Routledge, 2005, p. 88). While Firth has begun the prosodic analysis, the seeds have been planted by Panini. His accounts of phonetic relations provide the first step in identifying previously unknown regularities between the segmental and suprasegmental levels of language (Dinneen, 1995: 222).

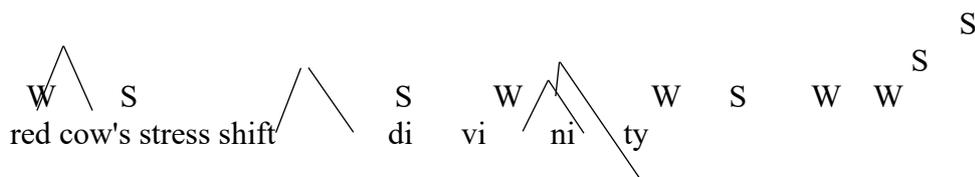
Applicability of Metrical Phonology Theory

Metrical Phonology Theory (MPT) is an approach developed within the generative phonology framework so as to apply to stress phenomenon by focusing on the foot as a phonological unit. From the point of view of MPT, stress is a relational property pinpointed by prominence relations among ingredients in a hierarchical structure (Khalifa, *Ibid*: 78). It is instantiated on distinguished levels or tiers. Each tier contains particular constituents. The first level consists of syllables; the second includes feet, and the third covers the phonological word. The first tier is the cornerstone, depending on which the other tiers are constructed. Stress is required to be linked only to the rhymes of Syls (Halle and Vegnaud, 1981: 3). Whether the rime contains a tense or a lax vowel or a diphthong is a critical issue for stress placement. Consider the examples given below:

astonish /ə stə nɪʃ/	maintain /meɪn teɪn/
purple /pɜ: pəl/	secure /sə kʃə:/

(Liles, 1971: 141).

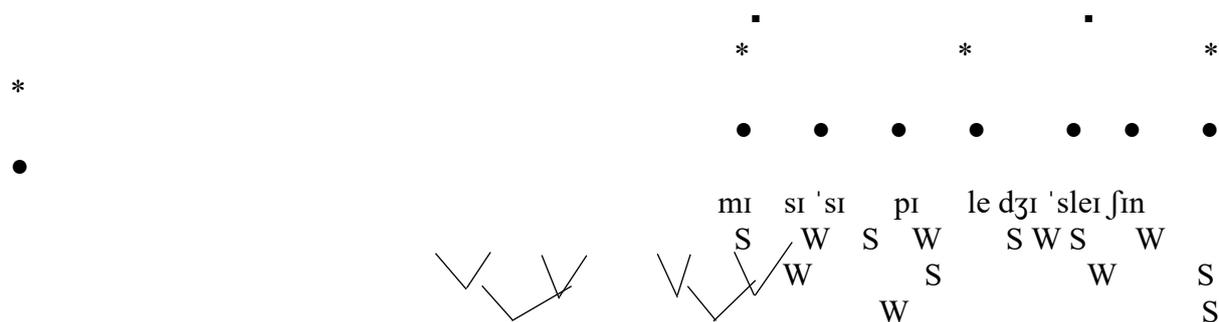
In the first column, the words end in Syls, which contain a lax vowel; consequently, stress is placed on the penultimate Syls. In the second column, the words end in Syls involving a diphthong and a long vowel, respectively (tensed rhymes), so they attract stress. A metrical system composed of two complementary parts metrical patterns (trees) and metrical grids, is obtained from the organizing law of MPT (Lieberman, 1975: 45). In a tree, relative prominence is shown by utilizing binary branching structures, where each pair is labeled S W as in the following:



Thus a tree is capable of dealing with disyllabic words as well as multisyllabic ones where non-terminal constituents and the specification of Syls for relative strength are permitted (Hayes, 1980: 7 and 11). Relational positional properties rather than inherent ones are depicted by the node label S W. Capturing only constituent structures, excluding rhythmic ones, is the defect of metrical patterns. This motivates the production of metrical grids adopted in the metrical analysis of the present research. A metrical grid satisfies the requirement of music rhythmicity; it subdivides intervals of time in a way that is acquainted with a musical notation, as in following:



The note values display a suitable method of indicating stress on distinct levels at which divisions, subdivisions, and subdivisions, etc. of an interval of time occur. Non-binary divisions are allowed commonly. Like time, the grid is endless where any position in it can be selected to begin with, and sequences are available backward, forward, up, or down the hierarchy (Lieberman, Ibid: 45f). It embodies an abstract set of units systematized in rows and columns. The height of the columns exemplifies the stress prominence of Syls, while the rows denote the series of rhythmic beats on different levels (Hayes and Puppel, 1985: 60). One-to-one correspondence between the elements of a terminal set and Syls is obligatory in grids (Lieberman and Prince, 1977: 315f). In grids, cross-linking is not permitted, in that stress on the first grid is linked to the first Syl, not to the second, stress on the second grid is linked to the second Syl, not to the first or third, etc. (Halle and Vegnaud, Ibid). 'Mississippi legislation' is an example of projecting a metrical grid from a metrical tree:



(Hayes and Puppel, Ibid: 61).

Methodology

To analyze the nominated data for the current research, five metrical parameters have been selected from Pearl, et al. (2009) because they are considered the hallmark of MPT. These parameters are quantity sensitivity, extrametricality, foot- directionality, boundedness, and foot-headedness.

Quantity Sensitivity

Quantity sensitivity parameter (henceforth qs) determines whether syllables (Syls) are considered identical or distinguished via resorting to Syl rime weight for the purposes of stress assignment (Pearl et al., 2009: 402). So, rime structure is regarded as the basis depending on which accounts of stress systems are devised (Gupta and Touretzky, 1991: 1). A language is either quantity sensitive (QS) where Syls are classified into heavy (H) and light (L), or quantity insensitive (QI) in which all Syls are dealt with identically 'Sn' (L or H). In the former instance, Syls that consist of long vowels are H whether they are attached to codas or not (V:(C)), Syls that contain short vowels (V) are L, and Syls that involve short vowel plus coda may be considered L (QS-CVC/VC-L) or H (QS-CVC/VC-H) depending on the constraints of the language in question. The word 'beautiful' /bju:tɪfəl/ is given QS and QI analyses in the following:

QS analysis	H	L	H	QI
analysis	Sn	Sn	Sn	
Syl rime	CV:	CV	CVC	Syl rime
CV: CV CVC				
Syl IPA	/bju:	tɪ	fəl/	Syl IPA
/bju: tɪ fəl/		(Pearl, et al., Ibid: 402).		

Extrametricality

The extrametricality parameter (henceforth Em) specifies whether or not all available Syls of the word are subsumed in metrical feet. It is divided into two values: Em and Em-non. In languages allowing Em, either the leftmost Syl (Em-Lt) or rightmost Syl (Em-Rt) is removed. By contrast, languages that are restricted to (Em-none) have all Syls included in metrical feet. The sign of Em has angled brackets <...> (Pearl et al., Ibid). Extrametricality is divided into two domains: segmental Em i.e. consonants Em, and higher-level Em in which syllables, feet, and words may be regarded as extrametrical (Hayes, 1995: 58). Em is applied to giraffe /dʒərə:f/ and octopus /ɒktəpəs/ in a, while b embodies the application of Em-none to afternoon /a:ftənu:n/.

a. Extrametricality, with QS, QS-CV:C/CVC/VC-H

		Em-Lt			Em-Rt
Syl class	<L>	H		H	L <H>
Syl rime	CV	CV:C		VC CV	CVC
Syl IPA	/dʒə	ra:f/		/ɒk	tə pəs/

b. No extrametricality (Em-none), with QS, QS-CV-L

Syl class	H	L	H	
Syl rime	V:C	CV	CV:C	
Syl IPA	/a:f		tə	nu:n/

(Pearl, et al., Ibid).

Foot- Directionality

The foot directionality parameter (henceforth Ft- Dir) explicates how metrical feet are constituted. This process of foot- construction is carried out once the syllables involved in feet are recognized. Feet can be built either from the left (Ft-Dir-Lt) or from the right (Ft-Dir-Rt) as follows:

Ft-Dir-Lt, starting metrical foot building from the left: (L L H

The following figure clarifies the adopted model:

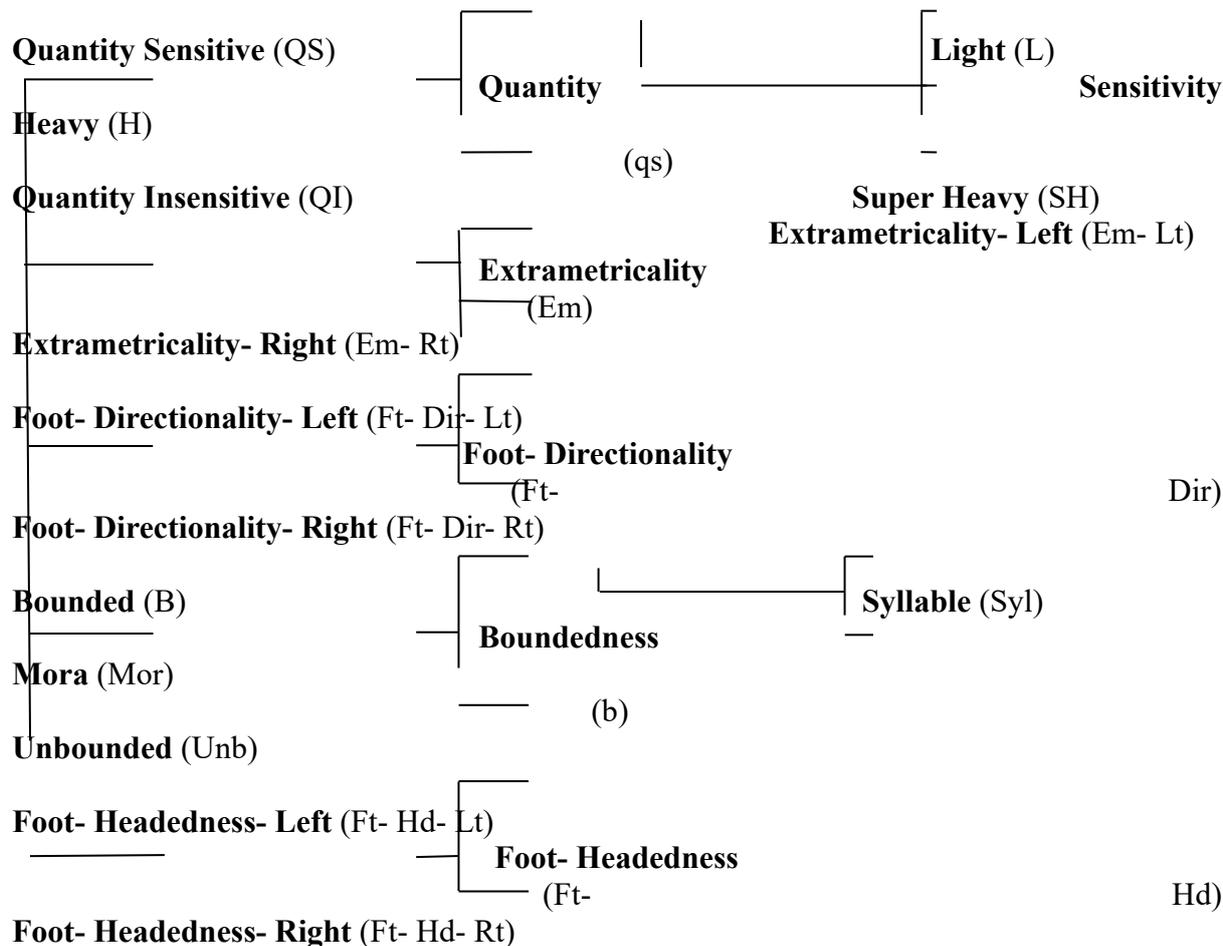


Figure (1): The Adopted Model

Five poetic lines have been selected from modern English poetry by resorting to Tennyson's poem 'The Charge of the Light Brigade' to undergo the scanning of the five metrical parameters (Tennyson, 1902: 493). The lines will be transformed into their transcribed forms by resorting to Roach's transcription system, which is based on IPA. Then, they will go through a direct scanning of the adopted model.

Data Analysis, Results, and Discussion

Quantity Sensitivity

The percentages of this parameter are given in Figure 2, which indicates QS value totally and the null occurrence of QI value:

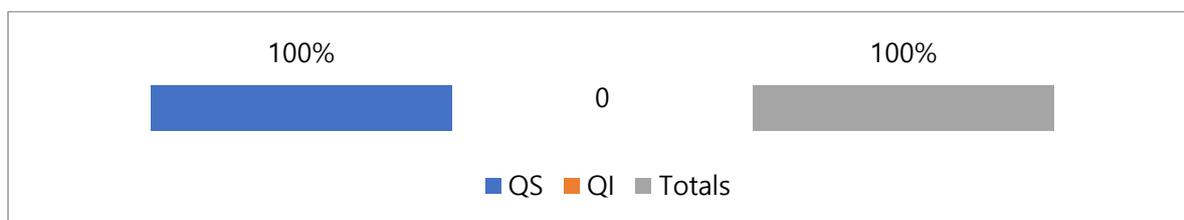


Figure (2): Percentages of qs Parameter in the Charge of the Light Brigade

The full and null manifestations of QS and QI values, respectively are traced back to the nature of English itself which is QS dividing the poetic line into L and H Syls. Even the projection of other metrical layers like foot and word is based on Syl weight. Consider Figure 3 which presents the percentages of these types of Syls:

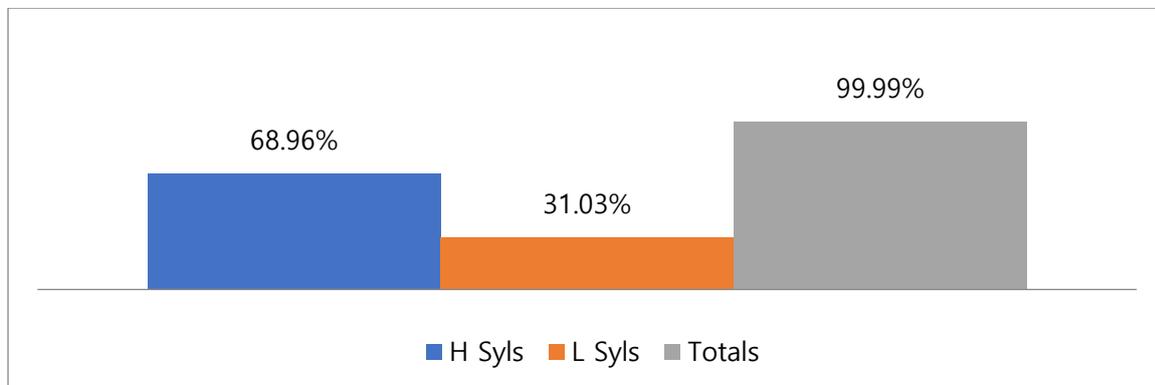


Figure (3): Percentages of the sub- value of QS in charge of the light brigade

H Syls outnumber L ones by 68.96% to 31.03% due to their positioning in the head and non-head positions during the poetic composition. Other reasons are the adoption of a traditional metrical system as well as the modern poet's beliefs, experiences, and society, which result in an amalgam of metrical complexity and rhythmic energy (Alexander, 2000: 232).

The suppression of L Syls is attributed to their limitation to only non-head positions; within one instance only they occur in the head positions (consider line 3 in the appendix). H Syls are presented via using seven forms: cvc, cv:c, cvvc, vc, v:c, cvcc, and cv:. L Syls are manifested by utilizing three forms: cv, ccv, and v. Consider the following examples which instantiate these syllabic forms whether as multisyllabic words or monosyllabic ones: **forward** /fɔ: wəd/ cv:cvc, **rode** /rəud/ cvvc, **all** /ɔ:l/ v:c, **of** /əv/ vc, **half** /hɑ:f/ cv:c, **six** /siks/ cvcc, **vally** /væ li/ cv, **brigade** /brɪ geɪd/ ccv, **a** /ə/ v, and **the** /ðə/ cv. The basic principle which governs the heaviness or lightness of Syls is the weight of rhyme of Syls. Syls with branched rhyme or nucleus are heavy on the foot- level, while on the word level the Syls with branched rhyme and nucleus are heavier than those with branched rhyme only.

Extrametricality

The percentages of the values Em and Em- none of these parameters are shown in Figure 4.

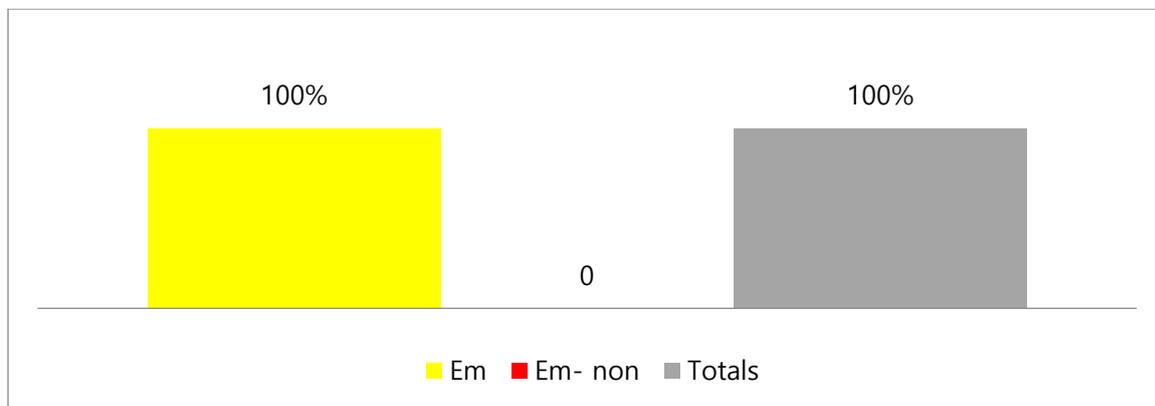


Figure (4): Percentages of Em parameter in charge of the light brigade

The dominance of Em value is attributed to the presentation of edged elements in all lines of Tennyson's poem. This value is divided into Em- Rt and Em- Lt in Figure 5. The former gives 100%, but the latter grants 0% because English starts the procedure of foot- construction from left direction. So, this is the normal consequence of adopting this direction during the metrical composition.

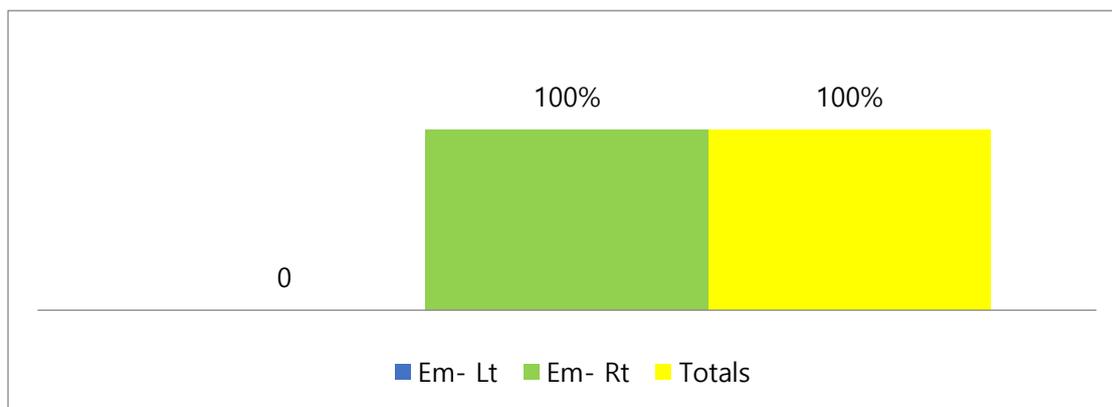


Figure (5): Percentages of Em- Rt and Em- Lt of the sub-value Em in charge of the light brigade

Now, Em- Rt is going to be presented on much more specific levels in Figure 6: Segment level (Em- Segs), Syllable- level (Em- Syla), and Word- level (Em- Wds). The former two have equal 40% presentations in the poem captured in lines: 1, 2, 4, and 5 as in the following examples: <d>, <wəd>, and <rəd>. The latter is materialized 20% in line 4 only as in <deə>. Em-Syla are captured irrespective of their weight since Em rules do not need to refer to constituents' internal structure (Hayes, Ibid: 134). Em- Segs are attributed to CVC Syla which are positioned edgely; such a position leads to the exclusion of the last consonant from the weight of rhyme of Syla (Harris, 2007: 134). Em- Syla and Em- Wds are ascribed to the monosyllables and orphan syllabic words put at the ends of poetic lines (Ball, 2016:146).

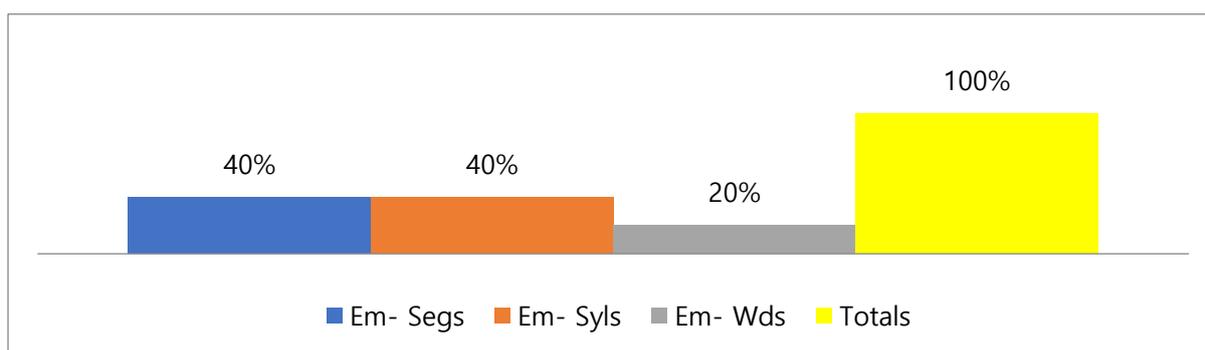


Figure (6): Percentages of Em- Segs, Em- Syla, and Em- Wds of the Sub-value Em- Rt in charge of the Light Brigade

Foot- Directionality

All feet 100% of Tennyson's poem are built from left- to right following the direction of English. Feet built from right- to left are not surfaced 0%. This obeys the direction of parsing in English that necessitates feet to be built by starting from the left edge of line (Kager, 2007: 207). Thus, the value of this parameter is restricted by the language under investigation. The percentages of this parameter are given in the Figure 7:

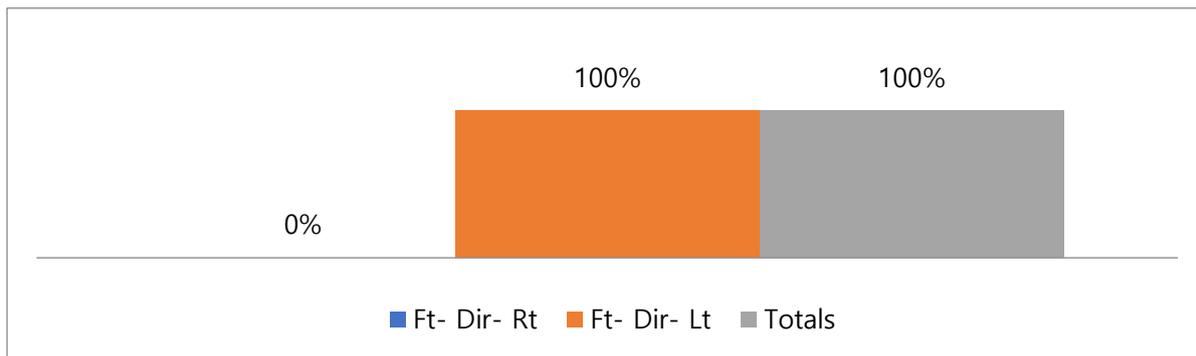


Figure (7): Percentages of Ft- Dir Parameter in charge of the Light Brigade

Boundedness

The type and number of units by which feet are constrained are shown in this parameter. That is, it makes clear whether the feet are B or Unb. B Feet are materialized at 100%, but Unb ones are not shown at 0%. This is due to English, a B language constrained by particular metrical units (Syls) associated with perfectly alternating rhythms orientated towards the right-edge of the line (Kager, *Ibid*: 197). Feet in the current poem are of the same sort (dactyl) and a number of constituting Syls.³ The number of Syls is lessened to two only within two feet where the last unstressed Syl is omitted, maintaining the first stressed Syl+ the second unstressed Syl. All in all, feet are bounded whether to three or two Syls. The percentages are granted graphically in the following Figure 8:

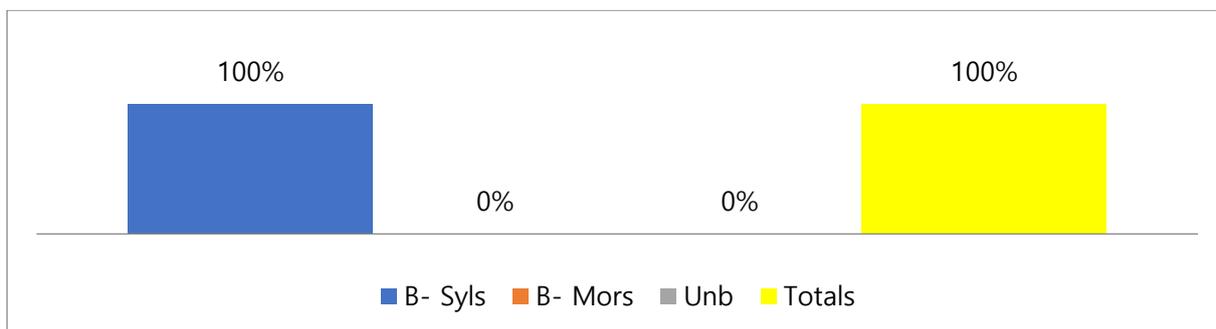


Figure (8): Percentages of b Parameter in Charge of the Light Brigade

Foot-Headedness

Left- or right-handedness is one way to describe the direction in which a person's feet are pointed. Consider Figure 9, where all feet are left-headed (Ft- Hd- Lt) because they are of the same sort, and no variation is shown:

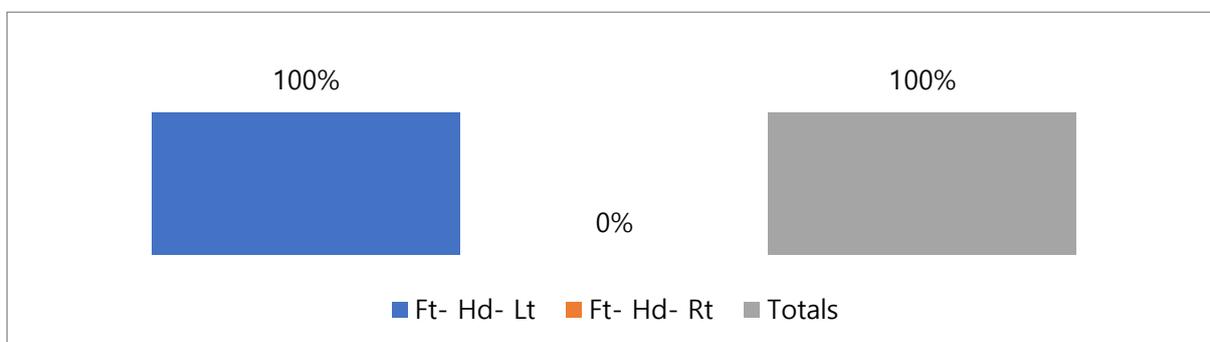


Figure (9): Percentages of Ft- Hd Parameter in charge of the Light Brigade

Now, the feet headed by L Syls and H ones are going to be shown. 90% of feet are headed by H Syls which is the norm, they can be found in all lines of the poem as in: /ha:f/, /ɒn/, /ɔ:l/, /rəʊd/, /h^nd/, /fɔ:/, and /laɪt/. Light Syls head 10% of feet as in /væ/ (consider line 3). Such feet represent variations of the norm for poetic and literary reasons (monotonous, expressive, emotional, intellectual, meaningful, rhetorical, and emphatic) (Abrams and Harpham, 2009: 194f). L Syls' Ft-Hd and H Syls' Ft-Hd frequencies are shown schematically as follows in Figure 10:

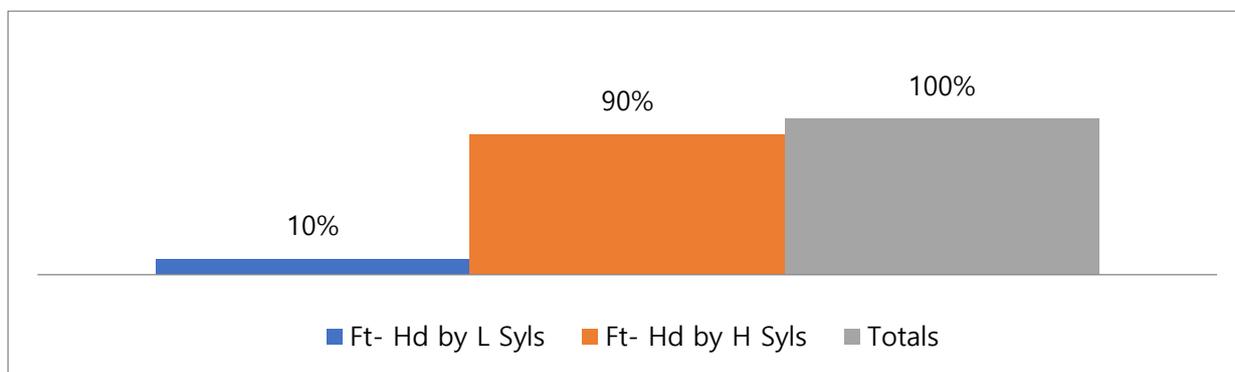


Figure (10): Percentages of Ft- Hd by L Syls and Ft- Hd by H Syls in charge of the light brigade

Conclusions

The conclusions of analyzing the five metrical parameters in modern English poetry by resorting to Tennyson's poem **The Charge of the Light Brigade** are the following:

- 1 Quantity sensitivity parameter shows quantity sensitive value and non-occurrence of quantity insensitive value. The former is divided in turn into light and heavy syllables.
- 2 The appearance of heavy syllables dominates that of light ones since they are positioned in the head and non-head positions. This underlies the adoption of a traditional metrical system and the modern poet's beliefs, experiences, and society that ensue a mixture of metrical complexity and rhythmic energy—limiting light syllables to only non-head positions results in their suppression.
- 3 Heavy syllables are presented via seven forms: cvc, cv:c, cvvc, vc, v:c, cvcc, and cv:, whereas light syllables are shown by using the three forms: cv, ccv, and v.
- 4 The extrametricality parameter shows edged elements in all lines of Tennyson's poem. This value is divided into Extrametrical- right and Extrametrical- left. The former has full presentation leaving the latter with a null appearance. This is so because English commences the foot- construction process from the left direction.
- 5 Extrametrical- right elements are presented on much more specific levels: segmental, syllabic, and word. Extrametrical-segments are ascribed to cvc syllables put at the edges of poetic lines. Extrametrical- Syllables and Extrametrical- Words are ascribed to the monosyllables and orphan syllabic words given at the final position of lines.
- 6 All feet are built from left- to the right, following the direction of parsing in English.
- 7 All feet are restricted by the identical type of foot (dactyl) and a number of constituting syllables (3 or 2).
- 8 The feet in all lines are left-headed because they involve the same sort, which is dactylic.
- 9 Most feet are headed by heavy syllables following the norm, while those headed by light syllables have few occurrences.

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Appendix

Metrical Analysis of Tennyson's Poem 'The Charge of the Light Brigade'

Half a league, half a league,	/ 'hɑ:f ə li:g 'hɑ:f ə li: <g>/
	Syllable- level (● ● ● ● ● ●)
	Foot- level (*)
*)	Word- level (■)
▪)	
Half a league onward,	/ 'hɑ:f ə li:g ɒn <wəd>/
	Syllable- level (● ● ● ● ●)
	Foot- level (*)
*)	Word- level
(■)	
All in the valley of Death	/ 'ɔ:l ɪn ðə væ lɪ əv <deə>/
	Syllable- level (● ● ● ● ● ● ●)
	Foot- level (*)
*)	Word- level
(■)	
Rode the six hundred.	/ 'rəʊd ðə sɪks hʌnd <rəd>/
	Syllable- level (● ● ● ● ● ●)
	Foot- level (*)
*)	Word- level
(■)	
'Forward, the Light Brigade!	/ fɔ: wəd ðə 'laɪt brɪ geɪ <d>/
	Syllable- level (● ● ● ● ● ●)
	Foot- level (*)
*)	Word- level
((■)	