Studia Metrica et Poetica 4.1, 2017, 7–40

Metre, rhythm and emotion in poetry
A cognitive Approach

Reuven Tsur*

Abstract: This essay integrates what I have written on the contribution of meter and rhythm to emotional *qualities* in poetry, opposing them to emotional *contents*. I distinguish between "meaning-oriented" approaches and "perceived effects" approaches, adopting the latter; and adopt a qualitative (rather than quantitative) method of research. Providing a simplified list of structural elements of emotion, I explore structural resemblances between rhythmic patterns and emotions. I investigate such issues as convergent and divergent poetic styles, convergent and divergent delivery styles, hypnotic poetry, the contribution of meter and rhythm to a "dignified quality"; and the rhythmic performance and emotional effect of stress maxima in weak positions. Finally, I locate my work between impressionist criticism on the one hand, and meaning-oriented criticism on the other.

Keywords: poetic rhythm; emotional qualities; "meaning-oriented" criticism; "perceived-effects" criticism; qualitative approach; quantitative approach; cognitive poetics

Introductory

This essay is an attempt to integrate what I have written during the past forty-five years on the contribution of meter and rhythm to emotion in poetry, that is, emotional *qualities* rather than emotional *contents*, and locate it among other approaches.

Impressionist criticism devotes much attention to emotions in poetry, but fails to relate them to the texts. Analytic criticism excels in the verbal analysis of the texts, but sometimes has difficulties to relate them to human qualities. Cognitive poetics explores emotions as described by cognitive psychologists, and offers *plausible* hypotheses (Margolis 1962) to justify systematically the attribution of emotional qualities to poetic texts. One must distinguish between emotional contents and emotional qualities in a poem. The former are closer to thought processes, the latter to perception. "Chilling and killing my Annabel Lee" may be *thought to be* a sad event, but *perceived as* playful or

* Author's address: Reuven Tsur, Tel Aviv University, Tel Aviv 69978, Israel; email: tsurxx@post.tau.ac.il.

doi: doi.org/10.12697/smp.2017.4.1.01

as suggesting simplified mastery of reality. Perception, as opposed to thinking and remembering, occurs in a situation defined here and now, while the stimulus is present. In other words, perception is characterized by immediacy; thought and memory may be directed to more remote things. One becomes aware of the contents of this verse line by focusing on the extralinguistic world to which it refers; one becomes aware of its emotional quality by immediate attention to the interaction of its contents, syntactic structure and sound patterns. Sentences like "My sister is sad" and "This music is sad" are used in different senses (Bouwsma 1961). In the former, "sad" refers to a mental process of a flesh-and-blood human. In the latter, it does not refer to a mental process of the music; nor does it refer to the emotions the music arouses in the listener. One may be perfectly consistent when saying "This sad music inspired me with great happiness". "Sad" means here that the speaker has detected some structural resemblance between the music and an emotion (Hepburn 1968). This is its perceived effect, its aesthetic quality.

Approaches to the Versification–Emotion Relationship

When discussing approaches to the contribution of versification to emotion in poetry, one must make two consecutive distinctions. First, one must distinguish between approaches that rely on *ad hoc* principles and those that are governed by explicit, consistently applicable principles. Within the latter, one may distinguish between "meaning-oriented" approaches and "perceived effects" approaches. The former tends to displace attention from the sound of words to their meaning; the latter attends to resemblances between the sound structure and the structure of some emotion. Methodologically, one may distinguish between exploratory-qualitative method and confirmatory-quantitative method. The latter counts the number of subjects who claim to have perceived a certain emotion in a text; the former offers "plausible" hypotheses based on psychological and linguistic research to account for such perceptions, even of a single participant. Cognitive poetics is an instance of the former, the statistical methods adopted by literary studies from the social sciences are instances of the latter. As I have demonstrated elsewhere (Tsur 2012: 271–274), rigorous confirmatory-quantitative studies in reader response that are not preceded by proper exploratory-qualitative analysis are prone to predetermine the results of the research. Another direction in confirmatory-quantitative studies is large-scale statistical investigation of certain stylistic devices in literary texts. The present study adopts the "perceived effects"

approach, in the exploratory-qualitative mode, within a theoretical framework of cognitive poetics. In the rest of this section I will present several issues as discussed by the *ad hoc* approach, a statistical meaning-oriented approach, and an analysis that oscillates on the verge of the perceived-effects and meaning-oriented approaches, and then suggest how the perceived-effects approach would treat them.

Traditionally, emotions belong to the domain of impressionistic criticism. The critic is concerned with his own emotional responses rather than the structure of the text. Analytic criticism, by contrast, displays great concern for the structure of the text and the underlying principles. In the age of analytic criticism impressionism is frequently disguised by linguistic analysis; in such cases, however, the critic cannot point at some consistently applicable principle that would justify the attribution of some emotional quality to a text structure. Consider the following passage from Pope:

1. Our plentous Streams a various Race supply;
   The bright-ey'd Perch with Fins of Tyrian Dye,
   The silver Eel, in shining volume roll'd,
   The yellow Carp, in Scales bedrop'd with Gold,
   Swift Trouts, diversify'd with Crimson Stains,
   And Pikes, the Tyrants of the wat'ry Plains.
   ("Windsor Forest", 141–146)

John A. Jones, in his book on Pope's couplet art, quotes this passage, and makes the following comment on its third line:

> Because the participle "roll'd" is the rhyme word, the verb quality of "rolling" is emphasized rather than adjectival or substantive quality. "Shining volumes" is more effective coming before the rhyme "roll'd" than it would be after it, for it is the climactic rolling or writhing that is highlighted. We do not always think of volumes as round but here it means "coils"; and when "roll'd" describes "volumes", the eelish quality is heightened, as the reader can easily imagine, even if he has never landed an eel. (Jones 1969: 74–75)

Doubtless, 'the climactic rolling or writhing" of a landed eel has strong emotive connotations. But, unfortunately, Pope used the past participle "rolled" and not the present participle "rolling". To smoothen the transition, Jones mentions only "participle", without specifying "present" or "past". Or, consider the first sentence of this quotation from Jones. The word *because* suggests a logical, causal relationship between its two clauses. But is there? To justify

such a statement, there must be some unmentioned generalization that can be consistently maintained as, for instance, "When a past participle occurs in the rhyme word, its verb quality is emphasized rather than adjectival or substantive quality". I am not aware of any such valid generalization. Nor am I aware of any principle that would justify shifting the meaning of the passive "rolled" in a context of "shining volume" from 'being formed into a mass by turning over and over' into active "climactic rolling or writhing". "Volume" suggests precisely such a mass. Rather than "climactic rolling", it is the anticlimactic "rolled" that is manipulated into the rhyme.

In fact, all the available grammatical and stylistic evidence suggests that the adjectival quality is emphasized in this epithet. Jones's interpretation, however, crucially seems to depend on the past participle's *active* "verb quality". Since, however, everybody feels that rhymes do something important to words, and so little is known about *what* they do to them, Jones quite safely resorts to the rhyme word to enlist it in the service of the "verb quality" construal of the participle. As a matter of fact, a straightforward adjective would do the job equally well, if it were possible to construe it as suggesting activity rather than a passive state. When words with certain meaning components are systematically manipulated into the rhyme, one can, perhaps, make a case for its significance; but even that cannot justify any generalization of *this* kind. Whenever the critic claims that there is some interaction between sound and meaning, he must make explicit the principles on which he is relying. Briefly, even if one could make out a case for a "climactic rolling or writhing" construal on metaphoric grounds, it would have nothing to do with versification.

Actually, such syntactic inversion is not confined to this couplet in Pope's poetry: he quite frequently resorts to this stylistic device, manipulating the verbal element into the rhyme, with the complement preceding it, in precisely the first line of the couplet. Consider, for instance, the following couplet:

2. Sole judge of Truth, in endless Error hurl'd:
   The glory, jest and riddle of the world.
   (Pope: "An Essay on Man", II. 17–18)

The antithesis leaves little room for doubt that *Error* in the first line is a word of key importance. Although *hurl'd* contributes such components to the image as helplessness, passive endurance and inconstancy, its decisive component, physical transfer, has little relevance to the thought. As a matter of fact, its main function is syntactic: to attribute somehow "error" to Man ('victim to endless error' would do as well). *Hurl'd* constitutes a *virtuoso* rhyme with *world,* but this has been achieved at the double price of an "inelegant" syntactic

inversion and manipulating the word of key importance out of the rhyme. Is it possible that a great master of poetic technique like Pope should be guilty of such incompetence? And how could we explain, then, that precisely this "incompetent" line constitutes one of the most famous couplets on which Pope's reputation as a major poet rests? The "perceived effects" approach, by contrast, assumes that the syntactic inversion and the manipulation of the key word out of the rhyme serve one common effect (not necessarily meaning). Likewise, semantically, "rolled" in Excerpt 1 serves to reinforce "volumes"; syntactically it is required to complete the attribution of "shining volumes" to "eels". As the casual collection of couplets in my book (2008: 120–121) may suggest, such inversions, manipulating words of relatively little importance into the rhyme, are not uncommon in Pope. In all but one of those couplets the inversion occurs at the end of the first line. I shall argue that this is quite significant.[1] Briefly, while Jones's discussion presupposes an *ad hoc* principle, the "perceived effects" approach invokes here an explicit principle formulated by gestalt psychologists and art critics:

> The rule that governs the process is evident. The effect depends on the degree of simplicity of the whole as compared with the degree of simplicity of the parts. Greater simplicity of the whole makes for greater unity. The simpler the parts, the more clearly they tend to stand out as independent entities (Arnheim 1967: 61).

"On the whole, however, the simplicity of any part must be modified or weakened sufficiently to make the part dependent on, and therefore integrated with, its context" (Arnheim 1967: 65). By inverting the phrase and by manipulating the word of lesser importance into the rhyme, Pope weakens the simplicity of the first line and increases its dependence on the couplet, enhancing the punchline quality of the second line. Briefly: it is perfectly true that the syntactic inversion manipulates "rolled" into the rhyme; the only question is, how does this affect the couplet's perceived quality, and by what principle one may account for this. Rhyme cannot change the meaning of the word; but the manipulation of a word of lesser importance into the rhyme may affect the perceived quality of the rhyme. Persons who read poetry for mainly its meaning will not notice such quality changes.

Meaning-oriented approaches tend to displace the source of emotional qualities from the sound patterns of poetry to the meaning of the words. An

---

[1] In the first 50 couplets of "An Essay on Man" such line-final inversions occur in twelve first lines and in two second lines.

illuminating case can be found in Benjamin Hrushovski's 1980 paper "The Meaning of Sound Patterns in Poetry: An Interaction View", at the very meeting point of the meaning-oriented and perceived-effects approaches. While I agree with much of what he says in that paper, I wish he went one step further. Here I will quote his analysis of one of his examples and consider how metric structure may or may not interfere with the sound-expressive process. Traditional poetics has important things to say about how tones, moods and emotions are abstracted from the *meaning* of the words; but how are they abstracted from the speech sounds? My 1987 book can be described as an inquiry into possible sources of the "tone" or "emotional quality" generated by speech sounds and the way these traits are grasped as parallel to an abstraction from the meaning of the words (tone, mood, emotion, etc.). One important aspect of the issue is that sounds are what I call "double-edged"; that is, they may be "expressive" of vastly different, or even opposite, qualities. Thus, for instance, the sibilants /s/ and /š/ may have a *hushing* quality in one context, and a *harsh*, noisy quality (to varying degrees) in some other. Thus, for instance, Hrushovski quotes Poe's line

3. And the silken, sad, uncertain rustling of each purple curtain

where the sibilants may be onomatopoetic, imitating the noises; or they may reinforce – or be expressive of – a quiet mood in Shakespeare's sonnet:

4. When to the sessions of sweet, silent thought
   I summon up remembrance of things past,
   I sigh the lack of many a thing I sought
   And with old woes new wail my dear time's waste.

Hrushovski argues that the source of the difference is that the two excerpts exemplify two different types of logical relationship between sound and meaning. The "perceived effects" approach would rely here on the assumption that sounds are bundles of features, on the acoustic, phonetic and phonological levels, and that the various features may have different expressive potentials. The claim I have elaborated in my 1987 book is that in different contexts, different potentials of the various features of the same sounds may be realized. Thus, for instance, the sibilants [s] and [š] may have at *some* level of description features with noisy potentials as well as features with hushing potentials. To spell this out: speech sounds are typically encoded, that is, the acoustic information that transmits it is restructured into an abstract phonetic category, and excluded from consciousness. Some speech sounds are more thoroughly,

some less thoroughly encoded. If you ask "which one is acoustically higher, [ba], [da], or [ga]", most people will answer that they don't know what you are talking about. If, however, you ask which one is higher [s] or [š], most people will easily answer that [s] is higher. In certain circumstances, responsiveness to abstract categories goes with rigidity; responsiveness to rich elusive sensory information with flexibility. The double-edgedness of the sibilants is related to different aspects of the same noises. The tender or hushing quality of [s, š] may have to do with their feature [+CONTINUOUS] and with their being of the few consonants that are less thoroughly restructured in the course of phonetic decoding of the signal, enabling the perceiver to attend to some rich, inarticulate sensory information; tenderness is typically correlated with openness to rich sensory information. That is why mothers are wont to sound a prolonged [š] sound to hush their crying babies. The "noisy" quality of these sibilants springs from the aperiodic nature of the very same sensory information, a stream of irregular noises. In Poe's line, the contents realize the noisy potential, in Shakespeare's quatrain the hushing potential. In Wittgenstein's terms, readers are "aspect-switching" from one excerpt to the other. On the other hand, speech sounds may definitely lack certain other potentials, as a rewriting exercise performed by Hrushovski (1980: 44) may suggest:

> Now, if this is the case, would not any sound pattern do? Let us try to "rewrite" the Shakespearean lines using words similar in content:
>
> 5. When to the crux of crucial quiet thought
> I crave and call remembrance of things past
>
> We have already created a very similar network of sounds, this time based on the repetition of *K,* strengthened by the cluster *K* + *R* (involving the original word "remembrance" too). Nevertheless, it seems that this sound pattern cannot possibly express silence, though "quiet thought" starts with *K* as "silent thought" starts with *S.* It is plausible that a reader will impute to this text something strong and harsh, reinforced by the sound pattern. The pivotal word may become "crux", though its counterpart "sessions" was subordinated to "sweet silent thought". One may generalize that, in a part of a text in which a sound pattern coexists with a number of semantic elements, the sound pattern may contribute to shifting the center of gravity from one direction of meaning to another.

Had the speech sounds no expressive potential of their own, the network of sounds based on /k/ would have readily assumed the emotional quality of quietness, which it doesn't. Here the sound tends to confer upon the text

"something strong and harsh", and "may contribute to shifting the center of gravity from one direction of meaning to another" (e. g., from *quiet* to *crux).* But Hrushovski does not go into the phonetic-acoustic source of this potential. According to the present conception, voiceless plosives are perceived as hard, because they are abrupt and thoroughly recoded: none of the rich precategorial sensory information reaches awareness.

This putative shifting of the center of gravity became possible only through a regularization of metre in the transcription: metric deviation, the two successive, alliterating stressed syllables in "sweet silent" foreground these words and focus attention on their meanings. So, let us amend the transcription to

6. When to the quorum of kind, quiet thought

Now notice this: even though we are prevented now from shifting the center of gravity to some other "pivotal word", the /k/ sound retains its hard and strong quality, and by no means becomes expressive of some "kind, quiet" atmosphere originating in the meaning of the words. The sound pattern becomes either "neutral", or improper to the emotion expressed. In view of the present analysis, one can account for the harsh qualities of the [k] and the hushing qualities of the sibilants without having recourse to the meaning of the alleged "pivotal words", by the oppositions ABRUPT vs. CONTINUOUS and MORE vs. LESS ENCODED.

As this exercise may suggest, speech sounds do have (sometimes conflicting) emotional potentials of their own and one may not ascribe to them just any quality suggested by the meaning of the text. The meaning of the words may activate one or the other potential, but cannot generate them. Metric structure can focus attention on the emotional connotations of certain words; but, typically, it generates perceived effects through its gestalt qualities (as demonstrated throughout this essay).

Highly relevant to the present inquiry, Maria Kraxenberger's recent PhD dissertation "On Sound–Emotion Associations in Poetry" (2017) explores the associations of a variety of prosodic aspects with emotions in poetry. Our approaches differ at least in two respects: her work is confirmatory-quantitative; and we differ in the "object of imitation" too, to use Aristotle's term. She relies on "acoustic profiles that are dependent on suprasegmental parameters" that characterize people as they speak. I, by contrast, focus on the resemblance between the structure of texts and the structure of emotions. In this, I rely mainly on gestalt qualities and precategorial auditory information behind the phonetic categories. In discussing vocal performances, Kraxenberger relies on the following parameters:

> we tested the extent to which the suprasegmental features that are known to influence joyful and sad prosody in general are actually characteristic of how native-speaking participants recite poetry. To do this, we analyzed the acoustic features of the emotional prosody of nonprofessional native German speakers' recitations of joyful and sad German poems. In line with previous research, we focused on mean pitch, mean intensity, and articulation rate.

I said that this approach represents people as they speak, because joyful people typically display greater pitch span, greater span of intensity in speech, and speak faster than sad people. The fact that she relies on the *mean* rather than the *span* of pitch, intensity, and articulation rate obscures, of course, the issues to some extent. As we shall see, I on the other hand, argue that the structure of e.g. divergent poetry resembles in significant respects the divergent streams of information in emotions. I also treat, following Henry J. Todd, Milton's phrase "supréme Kíng" as displaying some structural resemblance between the consecutive heavy stresses and the outward manifestation of dignity in humans (not necessarily as they speak),, when performed as a spondee.

Kraxenberger, Maria "On Sound–Emotion Associations in Poetry" (2017). Unpublished Freien Universität Berlin dissertation.

At this point, I want to mention Marina Tarlinskaja's work in metrics. Her approach is diametrically opposed to mine in many respects, among others, it is strongly meaning-oriented and confirmatory-quantitative. Perceived effects are not within the scope of her research. It is based "not so much on insight and intuition as on wide quantitative analyses of observable facts". In spite of this, our findings are considerably overlapping, but with quite different implications. I will present these overlaps and differences below, in the context of my discussion of stress valleys.[2]

---

[2] The Lakoff school of "cognitive poetics" is essentially meaning-oriented, and has very little interest in the sound patterns and perceived qualities of poetry. One of the rare studies in this respect, Eve Sweetser's (2006) paper on versification in Cyrano de Bergerac, is extremely meaning-oriented. In my (2008a) detailed counterproposal (reprinted in Tsur 2008b), I point out the perceived effects she misses owing to her unduly rapid shift of attention from the sound patterns to meaning.

Emotion and Emotional Qualities

At the beginning let us give in a nutshell a simplified list of some structural elements of emotion. Any element in the description of emotions may "typically count toward" more than one aesthetic (or emotional) quality, sometimes toward incompatible qualities (Sibley 1962). Emotions involve situation appraisal through thought processes, plus undifferentiated energy. They consist of streams of information that display a tendency toward an object judged suitable or away from an object judged unsuitable. Emotions involve deviation from normal levels of energy; e. g., low energy level may count toward such emotions as sadness or calm; high energy level may count toward such emotions as gladness or anger. Emotions are active in the background, without preempting everything else. Weak gestalts are associated with emotional qualities, strong gestalts with rational or witty qualities. A special combination of weak and strong gestalts tends to yield "hypnotic poetry" (see below). Psychologists distinguish "convergent thinking" and "divergent thinking abilities" (for logical and creative thinking, respectively) (Guilford 1970 [1959]). Emotions are more divergent than creative thinking. Some altered states of consciousness as mindfulness meditation are highly correlated with divergent thinking (Berkovich-Ohana et al. 2016). There is no fixed point on this spectrum where one category turns into another (Duffy 1968 [1941]). Language and logic are typically related to the left hemisphere of the brain, emotions to the right hemisphere. Our aim is to create critical tools that have sufficient descriptive contents to describe the resulting structures in a text.

This paper will explore the contribution of metre and rhythm to emotional *qualities* in poetry. Emotional contents will concern us only as part of a more complex configuration. The assumption is that the sound patterns contribute to poetry something that cannot be reduced to meaning, only to perceptual qualities. They generate some general psychological atmosphere, that can be individuated by semantics in a withdrawn, and receptive attitude, or an assertive, outward directed and actively organising attitude, respectively, in a wide variety of emotions.

Convergent and Divergent Poetry

Poetic rhythm has three dimensions: versification, language, performance (Wellek & Warren 1956). Versification and language may act in convergence or divergence. When they conflict, a rhythmical performance may accommodate

them such that both can be perceived in one vocal actualisation. I conceive of a rhythmical performance as a problem-solving activity. In performance, we must assume "triple-encodedness": the same noises may have simultaneously three different functions: a falling intonation contour, for instance, may indicate the end of a syntactic unit (sentence), of a rhythmic unit (the line); at the same time, it may be expressive of a long fall or, alternatively, of coming to a rest.

In a convergent style, phrase endings and line endings tend to converge; stressed syllables tend to occupy metrical strong positions, unstressed syllables – weak positions; alliterations tend to coincide with stressed syllables in strong positions; stanza forms tend to be symmetrical. In a divergent style, all these tend to diverge, and stanza forms tend to be asymmetrical. Up to a theoretically undefined point, divergent style tends to yield increasingly emotional poetry, as in Milton and Shelley; beyond that point, it tends to yield witty poetry, as in Donne's Satires. A convergent style, in certain circumstances may yield witty poetry, as in Alexander Pope, or simplified mastery of reality, as in nursery rhymes and folk poetry. Leonard B. Meyer accounts for the association of weak and strong Gestalts in music with emotional and intellectual qualities respectively, as follows. "Because good shape [and we could add "convergent structures"] is intelligible in this sense, it creates a psychological atmosphere of certainty, security, and patent purpose, in which the listener feels a sense of control and power as well as a sense of specific tendency and definite direction" (Meyer 1956: 160).

A combination of regular metre with irregular or asymmetrical stanzas and/or frequent enjambments (and some additional characteristics, see below) may yield hypnotic poetry, as in Coleridge's "Kubla Khan", or in Edgar Allan Poe's "The Raven" and "Ulalume"; in "Annabel Lee" the beginning suggests a childish attitude, simplified mastery of reality, but the last stanza becomes hypnotic poetry (prosodic structure remains the same, the difference is in the situation appraisal).

Structuralist phonetics conceives of speech sounds as bundles of distinctive features (Jakobson [et al.] 1952). According to one of the Gestalt rules of perception, interaction between gestalt-free elements (colour in visual perception and overtones in music) is increased within, but inhibited across strong gestalt boundaries; but it is boosted across weak Gestalt boundaries. This may apply to distinctive features too. In convergent and divergent poetry, alliteration assumes different characters: the alliterating speech sounds are more scattered in divergent than in convergent poetry; in convergent style, they tend to reinforce meter, in divergent style they tend to blur meter; at the same time, the distinctive features are perceived as more closely packed in convergent

alliteration, more diffuse in divergent alliteration, interacting across the weak Gestalt boundaries.

Consider two excerpts from Poe and Milton:

7. That the wind came out of the cloud by night,
   Chilling and killing my Annabel Lee.
   Poe: "Annabel Lee"

8. Of Man's first disobedience, and the fruit
   Of that forbidden tree whose mortal taste
   Brought death into the World, and all our woe,
   With loss of Eden, till one greater Man
   Restore us, and regain the blissful seat,
   Sing, Heavenly Muse,
   Milton: *Paradise Lost*

Where is alliteration more intensive? More likely than not, we will get the answer that "chilling and killing" is more intensive. But consider this. In Milton's passage, there is an unusually great number of intensive alliteration patterns. F-r-t in *first* and *fruit*; s-t in *first*, *taste*, *restore*, *seat*; l-s in *loss* and *bliss*; *Eden* is wholly included in *-bidden* which, in turn, is wholly included in *-bedience*. Now notice this too. In the Poe excerpt, stressed syllables occur in all and only strong positions, unstressed syllables in all and only weak positions; there is one exception: "came" in a weak position, but it too is subordinated to "out". The alliteration pattern consists of two symmetrical whole words that comprise identical speech sounds (all but one), in the same order. The alliteration patterns reinforce metric regularity. In Milton's excerpt, by contrast, stressed syllables occur in mainly, but not all and not only strong positions; unstressed syllables occur in mainly, but not all and not only weak positions. Consequently, Poe's metric shape is convergent, much stronger than Milton's. Conversely, Milton's verse is highly divergent, has much weaker metric gestalts. What is more, Milton's passage displays an exceptionally complex enjambment, blurring the line boundaries. It begins with a preposition ("of") predicting a verb, which occurs six lines later (Sing). All the time, the reader must remember he has a loose end, while following the proceeding of the text. In addition, we have such minor enjambments, as "and the fruit/Of", or "mortal taste/Brought", or "till one greater Man/Restore us". Consider a rewriting of Excerpt 8 as "Heavenly Muse, Sing /Of Man's first disobedience and the fruit", etc. It has a more straightforward, single-minded psychological atmosphere. Consequently, the actual Milton passage has exceptionally weak

gestalts at all levels. This boosts the interaction of the precategorial phonetic and acoustic features of the alliteration patterns across all those boundaries. Briefly, in Poe's text, alliteration is focused on two compact words, perceived as playful punning rather than diffuse musical texture. Milton's alliterations, on the contrary, are backgrounded as rich, diffuse, but fused, precategorial, "musical" texture. Consequently, Milton's "great argument" assumes an intense emotional quality (Tsur 1978).

Convergent and Divergent Delivery Style

In poetic structure I have distinguished "divergent" and "convergent" styles. Pope is the archetypal convergent poet, usually perceived as witty; Milton and Shelley are the archetypal divergent poets, usually perceived as emotional. In my later work I found that in performance too there is a divergent and a convergent delivery style. The performer has considerable freedom in choosing his delivery style. Sometimes the same actor performs the same verse line in a convergent style on one occasion, and in a divergent style on another. I will present my categories of "convergent" and "divergent" delivery styles by way of scrutinising two recordings by Sir John Gielgud, sixteen years apart, of the last line of Shakespeare's Sonnet 128 (Tsur 2006):

9. To shún the héaven that léads mén to this héll.
   w s w s w s w s w s

When I first listened to these two performances by Gielgud, I tried to get an overall intuitive impression of the difference between them, rather than analyse it. I had an unexplained impression that Gielgud 2 is much more complex, artistically more sophisticated, rhythmically more satisfying. The best way to characterise my impression of Gielgud 1 was, perhaps, by punning on the English idioms "flat-out" and "flat out". The former is usually used as an intensive, that is, a modifier that has little meaning except to intensify the meaning it modifies; the latter suggests "in a blunt and direct manner". Later, when I compared the two readings' handling of the complexities of the verse line, this intuitive contrast was amply accounted for. If you encounter the stretch of language "To shun the heaven that leads men to this hell" in a prose utterance, it may be uttered as a single unit, or will at most be segmented into two segments, the relative clause, and what precedes it. Both readings of Shakespeare's verse are parsed into more segments. Now when you look at the wave plots

and pitch plots extracted from the two readings, an immediately-perceived difference becomes conspicuous (Figures 1–2). In Gielgud 1 there is a huge 413-msec pause between "shun" and "the"; and an even longer, 503-msec pause between "heaven" and "that" [ [3]]. In the wave plot extracted from Gielgud 2, by contrast, no such pauses are visible. Discontinuation is achieved here by means other than straightforward pauses []. Notwithstanding this, one of my associates could hardly believe that there is no pause there in this reading.

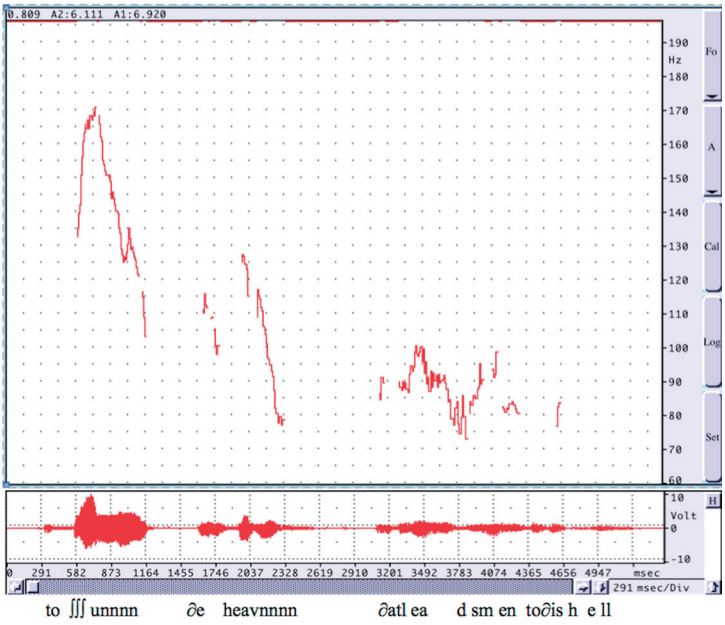

Figure 1. Wave plot and pitch extract of "To shun the heaven that leads men to this hell" Gielgud 1[4]

What is more, as Figure 2 shows, in Gielgud 2 the words "heaven" and "that" are uttered on one falling intonation contour, effectively grouping "that" backward rather than forward. It is the prolongation and overarticulation of the word-final /n/ that bears all the burden of generating discontinuity at the

[3] Sound files are available in the online version of this paper. *Ed.*

[4] The lower window presents the wave plot display which shows a plot of the wave amplitude (in volts) on the vertical axis, as a function of time (in milliseconds) on the horizontal axis. The upper window presents a fundamental frequency plot, which displays time on the horizontal axis and the estimated glottal frequency (F_0 = pitch) in Hz on the vertical axis.

caesura. Perceptually, what happens here is quite sophisticated. We have got here conflicting cues for continuity and discontinuity. The shared intonation contour and the lack of pause group the word "that" backward; the listener's syntactic knowledge and the sustained /n/ indicating a lack of progression suggest a new start after "heaven". Consequently, a caesura and a "metrical impulsion" across it are perceived at the same time. The line exerts pressure for completion upon which the caesura obtrudes.

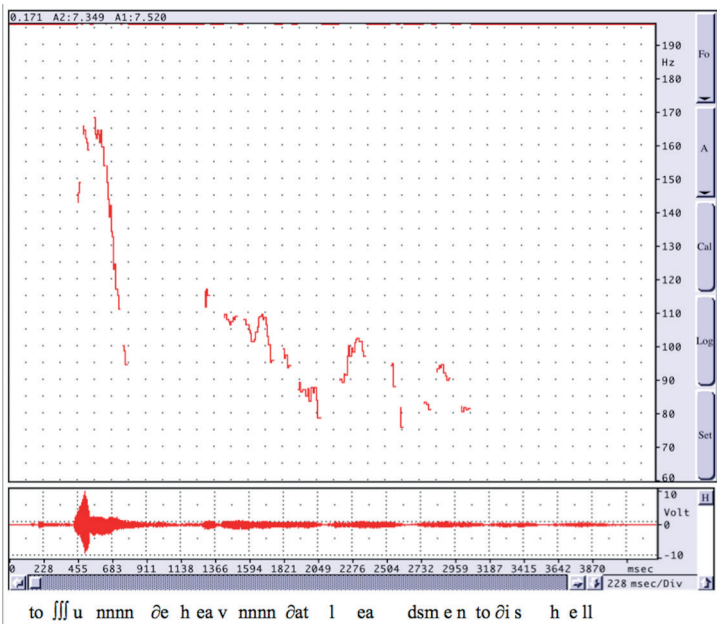

Figure 2. Wave plot and pitch extract of "To shun the heaven that leads men to this hell" Gielgud 2

I said above that in Gielgud 1 I intuitively felt that the same syntactic juncture was thrust upon the reader "in a blunt and direct manner" and, at the same time, acted as a modifier that has little meaning except to intensify the meaning (or quality) it modifies. This happens because the grouping cues cluster differently from Gielgud 2, displaying great redundancy. The beginning of a relative clause constitutes a major syntactic juncture. This is reinforced by an unusually long pause, and is further reinforced by the prolongation of the word-final /n/. It is this overarticulated syntactic juncture that confirms a prosodic event – a caesura. In other words, in Gielgud 1 the cues act in convergence, in Gielgud 2 in divergence. Two differences between the falling

intonation contours on "heaven" seem to be quite obvious, one measurable, the other perceptual. First, in Gielgud 1 the falling intonation contour of "heaven" is much longer than in Gielgud 2: it begins at 127.457 Hz (much higher than in the other reading), and falls to 77.915 Hz, slightly below the bottom line of "that" in the other reading. Second, concomitantly, the falling curve in Gielgud 1 arouses a feeling of "homecoming", whereas in Gielgud 2 there is a feeling that the curve fails to reach the point of rest, demanding completion. What is more, the /n/ is prolonged at this unsatisfactory point, generating a sense of arrest and a sense of impulsion across it at the same time. In Gielgud 1, by contrast, the "homecoming" of the falling intonation contour coincides with a major syntactic juncture, and the beginning of a longish pause, and a longer-than-usual word-final /n/. Exceptionally great stability is achieved. In Gielgud's readings /n/ is about 1.77 times longer than the combined duration of the preceding sounds h+ɛ+v. By comparison, in the Audio Edition of *Merriam-Webster's Collegiate Dictionary*, and in Simon Callow's reading of the same line the combined duration of the preceding sounds is over twice as long as that of /n/. In The Marlowe Society's reading /n/ is insignificantly longer than the combined duration of the preceding sounds. A similar story can be told, *mutatis mutandis*, about the sequence "shun the". In Gielgud 1 there is a longish pause between them (413 msec); in Gielgud 2 they are run one into the other. In both readings /n/ is considerably longer than the combined duration of the preceding sounds; in Gielgud 2 its relative duration is insignificantly longer than in Gielgud 1. In *Merriam-Webster's Collegiate Dictionary,* by contrast, /n/ is considerably shorter. As after "heaven", after "shun" too Gielgud 1 resorts to redundant cues: the prolongation of /n/ reinforces discontinuity that is also signified by a longish pause; whereas in Gielgud 2 it indicates discontinuity where the two words are run one into another. There are good prosodic and syntactic reasons (caesura and syntactic juncture) to indicate discontinuity after "heaven", with or without a pause. After "shun" it has neither syntactic, nor prosodic justification. It seems to be gratuitous – unless it has some rhetorical or paralinguistic justification. I have quoted Meyer on the psychological atmosphere inspired by convergent structures in music and poetry (cf. Meyer 1956: 160). In Gielgud 1 some elements of that atmosphere are present, the combination of cues for discontinuity thrusts upon the listener a psychological atmosphere of patent purpose as well as a sense of specific tendency and definite direction; but coupled with the voice quality, it inspires a psychological atmosphere of insecurity and anxiety.

I made an attempt to assess how listeners respond to Gielgud's two readings. Though I was asking about "rhythmical performance", my informants could not keep it apart from the emotional element. As far as pauses are

concerned, the same element may be an exponent of both the rhythmic and emotional quality. It is the latter that may justify the huge pause after "shun" too in Gielgud 1. Most informants agreed that the first reading is more emotional. They differed, however, in their evaluation of this emotionality, as well as on its relation to other elements in the performance. Two of them spoke of "ominous rhythm" and "awesome emotional tone", respectively. They probably referred to the same perceived quality, though attributed it to different aspects (rhythm, tone). In these comments, the emotional quality was implicitly judged as a "good-making" feature of the performance. One respondent squarely declared that he definitely preferred number 2, because the other was "full of pathos". This person agrees, then, with the others as to the presence of the emotional quality, but makes an opposite value judgment. By the way, I happen to sympathize with his judgment. In terms of the foregoing discussion, in Gielgud 1 the intensive human quality is not balanced by complexity. As we have seen, the effect of divergent cues may be subtler; that of convergent cues – more robust. To conclude, then, in Gielgud 1 the combination of cues for discontinuity is thrust upon the reader "in a blunt and direct manner", acting as a modifier that has little meaning except to intensify any perceptual or emotional qualities present, in this case anxiety inspired by the voice quality.

Hypnotic Poetry

Edward D. Snyder (1930) put forward the fruitful idea that "certain poems have a peculiar trance-inducing technique; that they owe their mysterious 'spell' to a magic no more incomprehensible than that of hypnotism; that by intensifying the listeners' suggestibility they permit experiences where – for better or for worse – the poet holds sway over the listeners' conscious and subconscious mind" (Snyder 1930: 38). In an effort to isolate the personality variable "absorption", devised to predict the hypnotisability of a person, Tellegen (1981: 222) propounded the dichotomy "experiential" and "instrumental set", the former being "a state of receptivity or openness to undergo whatever experiential events, sensory or imaginal, that may occur, with a tendency to dwell on, rather than go beyond, the experiences themselves and the objects they represent"; in the latter, input from receptors is not used to enhance experiencing but to make the discrimination needed for guiding instrumental acts and evaluating achievements. Such altered states of consciousness as hypnosis or meditation strongly presuppose an experiential set.

One of the distinguishing marks of hypnotic poetry is its "obtrusive rhythm". The poems mentioned above as hypnotic are of the most metrically regular poems in English. The regular rhythms do not generate here rationalist poetry as in Pope, for instance. Such obtrusive rhythm may amplify our involuntary physiological and psychological processes and, by the same token, it has been suggested, give "false security to the Platonic Censor in us" – so that the reader may feel freed to attend to ambiguities, or the irruption of the irrational, in the other layers of the poem. Regular, predictable meter gives security. Sometimes it turns "false" owing to the ambiguities and the irruption of the irrational in the poem, as in the afore-mentioned poems by Poe and Coleridge. But sometimes the source of insecurity is in the versification itself: unpredictable rhyme patterns, unpredictable line length, irregular stanza forms, etc. Poe is the grand master of highly predictable rhyme words, but irregular stanza forms. In hypnotic poetry, as in "The Raven" or "Kubla Khan", alliteration may reinforce both security and insecurity. Alliterations like "On the *pal*lid bust of *Pal*las" and "of a *dem*on that is *dream*ing" reinforce security; the diverging and interlacing sound patterns that blur each other inspire insecurity. Jakobson pointed out such interlacing alliterations in the poem, e. g.,

> "raven" contiguous to the bleak refrain word "never" appears once more as an embodied mirror image of this "never": /n.v.r/ – /r.v.n/. Salient paronomasias interconnect both emblems of the everlasting despair, first "the Raven, never flitting" at the beginning of the very last stanza, and second, in its very last lines the "shadow that lies floating on the floor" and "shall be lifted – nevermore": /nɛvər flítiŋ/ – /flótiŋ/ ... /flɔr/ ... /líftəd nɛvər/. (Jakobson 1960: 372)

Jakobson quotes these alliterations as instances of the poetic function in general; I am quoting them as characteristic of emotional poetry, and in combination with more than usually regular meter as characteristic of hypnotic poetry.

In "Kubla Khan" we have such alliterations as "*K*ubla *Kh*an", "*mea*sureless to *m*an", "*s*unless *s*ea", "*w*oman *w*ailing", "*m*ingled *m*easure" where the alliterations fall on stressed syllables in strong positions. At the same time, we have got such alliterations as "Xana*d*u *d*id", "*d*ome *d*ecree", where the alliterations occur in adjacent positions and blur meter. In Poe, obstinately repeated stock phrases and rhyme words, verse lines repeated with minute changes suggest "a tendency to dwell on, rather than go beyond, the experiences themselves and the objects they represent". The enormous energies in "Kubla Khan" and the drastically reduced energy levels in "Ulalume" generate different modes of experiencing the irruption of the irrational (in "Ulalume", the obstinate repetitions also suggest a psychological atmosphere of lack of progression).

Glicksohn, Tsur and Goodblatt (1991) tested the responses of high- and low-absorption participants to a Hebrew hypnotic poem. The former evaluated it as interesting, tense, pleasant and complex; the latter, as boring, relaxed, unpleasant and simple. The different qualities perceived by high- and low-absorption participants in this poem are hypothesized as being the result of the application of different cognitive strategies in organizing the poem as a whole. The latter tend to foreground those elements in the poem that induce "certainty, security, patent purpose" and minimize those that inspire awe and anxiety (ambiguities and the irruption of the irrational); the former tend to balance them against each other. Glicksohn et al. assume, therefore, that the different cognitive strategies used in organising the poem in question as a whole involve mainly the factors that determine whether the rhythm is perceived as one of false or genuine security. This may explain, why some readers regard Poe's poetry as the quintessence of poetry, whereas others as rather mediocre, minor poetry.

Let us have a look at the first stanza of "Ulalume".

10. The skies they were ashen and sober;
    The leaves they were crispèd and sere –
    The leaves they were withering and sere;
    It was night in the lonesome October
    Of my most immemorial year;
    It was hard by the dim lake of Auber,
    In the misty mid region of Weir –
    It was down by the dank tarn of Auber,
    In the ghoul-haunted woodland of Weir.

The verbal structure of this stanza displays a conspicuous tendency to dwell on, rather than go beyond, the experiences themselves, and also conveys considerable minute, precategorial information. None of the finite verbs suggest action, all are forms of the copula *be*, with descriptive phrases as predicates. The reader must also dwell on the obstinately-repeated rhyme words *sere*, *Auber*, *Weir* at unpredictable points of the stanza, suggesting lack of progression. So does the almost verbatim repetition of line 2. By the same token, this repetition upsets the symmetry of the stanza, inspiring uncertainty. In the second and third line there are three near-synonyms: *crisped*, *sere*, and *withering*. Lines 2 and 3 are literally identical, except for the substitution of the adjective *withering* for its near-synonym *crisped*. This generates a minimal semantic pair, based on the opposition *crisped ~ withering*, the latter emphasizing the process of losing moisture and vitality, the former emphasizing the resulting texture. These

synonyms emphasize different features in *sere*. Thus, the two tokens of *sere* have, and do not have, identical meanings, at one and the same time, generating a diffuse, precategorial texture. A similar, though less elusive, story can be told of the other parallel phrases in the lines with repeated rhyme words: *dim lake ~ dank tarn*, *misty mid region ~ ghoul-haunted woodland*, that also include an element of amplification. On the phonetic level, Excerpt 10 contains an unusual number of liquids ([l, r]), nasals ([m, n, ŋ]) and semivowels ([w, y]). These speech categories share two features: they are periodic and relatively unencoded. In periodic speech sounds the same wave form is repeated, inducing a relaxed attitude (there will be no surprises). Speech sounds are encoded: we perceive the unitary speech categories rather than the acoustic information that transmits them. In liquids, nasals and semivowels *some* of the acoustic information is perceptible in the background, contributing to the diffuse, precategorial background texture. Thus, both on the semantic and phonetic levels "chaotic over-differentiation" is generated, enhancing "the falseness" of security, and openness to the subtleties of experience.

Consider the same stanza with the repetitions-plus-variations omitted. It suggests a much more straightforward, goal-oriented psychological atmosphere:

11. The skies they were ashen and sober;
    The leaves they were crispèd and sere –
    It was night in the lonesome October
    Of my most immemorial year;
    It was hard by the dim lake of Auber,
    In the misty mid region of Weir –

Note that the first four lines of Excerpt 11 constitute a closed and stable symmetrical a-b-a-b quatrain. The addition of two more lines restructures the perception of the stanza, and generates a fluid ab-ab-ab structure that displays a psychological atmosphere of definite direction and patent purpose, going beyond, rather than dwelling on, the experiences themselves.

A poem becomes hypnotic, then, when greater than usual regularity is coupled with greater than usual irregularity, ambiguity and irruption of the irrational, inspiring awe and anxiety – as well as substantial deviation from normal energy level, either increasing or decreasing it, with a tendency to dwell on, rather than go beyond, the experiences themselves.

Metre, Rhythm, Dignity

I will introduce this issue via a controversy regarding the first line of the following excerpt from Milton:

> 12. And sat as Princes, whom the supreme King
> Exalted to such power, and gave to rule,

Milton's 1809 editor, Henry J. Todd comments on the first line of this excerpt: "I conceive that Milton also intended the last foot of the following verse to be a spondee, as more dignified and impressive than the accentuation, not uncommon indeed in our old poetry, of súpreme on the first syllable" (Todd 1970: 199). One hundred eighty years later, Gilbert Youmans takes issue with him: "Todd is almost certainly mistaken about Milton's intention in this case. […] Otherwise, these lines would violate one of Kiparsky's categorical rules for Milton" (Youmans 1989: 349–350). The issue at stake here is whether rhythm ought to be regularized or not.

The two agree about the structure of the verse line; they disagree about its performance. And they support their respective positions by reasons of different kinds. Youmans invokes metricality judgments, Todd – poetic effects. Psychologically, "the rhythmical performance" of a poem is a perceptual solution to a perceptual problem: when the linguistic and versification patterns conflict, they are accommodated in a pattern of performance, such that both are perceptible simultaneously. Youmans and Todd seek their solutions to this line within a convergent and a divergent delivery style, respectively.

Where several delivery styles are possible, one reason for choosing one rather than another may be aesthetic. Beardsley (1958: 465–469) speaks of three "general canons" of evaluation: unity, complexity, and some intense human quality. The greater the complexity of an aesthetic object, or the greater its unity, other things being equal, the better it will be considered. If the reciter "accentuates súpreme on the first syllable", straightforward unity may be greatly enhanced, but at the expense of complexity. If, however, the reciter strongly emphasizes both *-preme* and *King*, he may offer, in certain circumstances, a "rhythmical performance", so that both unity and complexity are enhanced, relative to each other.[5] The "certain circumstances" include the

[5] Arnheim (1967: 49) speaks of "simplicity" and "complexity", and observes: "In an absolute sense, a thing is simple when it consists of a small number of structural features. In a relative sense, a thing has simplicity when it organizes complex material with the smallest possible number of structural features". This holds true, *mutatis mutandis*, for unity and complexity as well.

over-articulation of *-preme*, to free mental processing space for the perception of the versification pattern conflicting with it. The present assumption is that listeners decode the consecutive heavy stresses using their knowledge of the phonological and versification features whose interaction produced their intonation signals; by the same token, they perceive the metric Gestalt as blurred.

Finally, when Todd defends his reading as a spondee on the grounds that it is "more dignified and impressive", he invokes the general canon of "intense human quality". What may "dignified" mean with reference to metric structures? It suggests that the listener may detect some structural resemblance between the consecutive heavy stresses and the outward manifestation of dignity in humans, such as weightiness, reserve of manner, and clearly articulated gestures. "Weightiness" in a context of a disyllable with its stressed syllable in a weak position, followed by another stressed syllable, suggests "having considerable mass"; in a context of dignified human behaviour it suggests "of much importance or consequence". As to "reserve", a stressed syllable in a weak position (followed by another stressed syllable) "holds back" the rhythmic movement of the line, whereas a dignified person "holds back", "controls" his responses, the expression of his emotions or thoughts. As to "clearly articulated gestures" in poetry, I have suggested that the rhythmical performance of such constructs as a disyllable with its second, stressed, syllable in a weak position requires exceptionally clear articulation.

I do not mean to imply that this is the permanent perceptual quality of consecutive stresses. As I have suggested, one poetic structure may typically count toward a wide variety of sometimes conflicting perceived effects. Such expressions as Milton's "supreme King" and Pope's line "And ten low Words oft creep in one dull Line" exploit different potentials of slow movement induced by successive stresses. Shakespeare spelled out the nature of slowness of a desirable kind:

13. They that have power to hurt and will do none,
    That do not do the thing they most do show,
    Who, moving others, are themselves as stone,
    Unmoved, cold, and to temptation slow,
    They rightly do inherit heaven's graces ... (Sonnet 94)

We must clear one more obstacle on the way of this solution. Wimsatt and Beardsley (1958: 598) write: "The notion of an accentual spondee (or 'level' foot) in English appears to be illusory, for the reason that it is impossible to pronounce any two successive stresses in English without some rise or fall of stress – and *some* rise or fall of stress is all that is needed for a metrical ictus".

If they are right, Todd's analysis is fallacious. But they are wrong. With reference to the line "To a green thought in a green shade" they write: "whatever we do with the two pairs of syllables, it remains absolutely certain that 'thought' is stronger than 'green' and that 'shade' is stronger than 'green'" (595). This absolute certainty is not as well founded as it could be. Thus, for instance, in his investigation of eleven recorded readings of Shakespeare's Sonnet XVIII, Chatman (1965) played excised segments of two syllables each to a panel of twenty-one professors of English, asking them to make judgments on their relative stresses. The professors voted unanimously that, e. g., in four out of eleven performances, *Rough* and *winds* were performed with level stresses, in six *winds* was performed as slightly more prominent, whereas in one performance *Rough* was slightly more prominent. This I take as evidence that "the notion of an accentual spondee (or 'level' foot) in English" is *not* illusory.

There is another way to generate a dignified quality by metre in poetry, pointed out by Aristotle in his *Rhetoric*:

> Of the various rhythms, the heroic has dignity, but lacks the tones of the spoken language. The iambic is the very language of ordinary people, so that in common talk iambic lines occur oftener than any others: but in a speech we need dignity and the power of taking the hearer out of his ordinary self. The trochee is too much akin to wild dancing: we can see this in tetrameter verse, which is one of the trochaic rhythms. (Aristotle 3.8, 1408b)

Aristotle had, then, considerable interest in the perceived effects of poetic rhythm. I will argue that his assertions about the iambic are doubtful; but about the rest, I tend to agree with him. Generations of critics during the past two millennia repeated Aristotle's assessment of the iambic with reference to many languages. Roger Fowler (1966) was the first one to point out that this assertion fails to conform with the facts. "This, paradoxically, may help to explain why the iambic measure is felt to be suited to English: not because its pattern corresponds to the prose rhythms of language, for it does not; but because it necessitates a constant syncopation of prose rhythm against its own rhythm, inviting poets to be metrically complex, not to jog along with simple regularity" (1966: 99). Moreover, as the great Hungarian poet, Miklós Radnóti (1943) pointed out in the Afterword to his volume of poetry translations, even Hungarian poets consider the iambic as the most natural metre (even though in Hungarian, stress falls invariably on the first syllable of the word).

In my chapter on the iambic and the trochaic in my book (Tsur 1977; reprinted in Tsur, 2017) I quote H. Woodrow, who found in his tick-tack experiments, back in the beginning of the Twentieth Century, that in a series

of tick-tacks, "with equal temporal spacing, a regularly recurring, relatively greater intensity exerts a group-beginning effect, and a regularly recurring, relatively greater duration a group-ending effect" (Woodrow 1951: 1233). "Intensity has a group-beginning effect: duration, a group-ending effect: pitch, neither a group-ending nor a group-beginning effect" (Woodrow 1911: 77). In his doctoral dissertation, Curt Rice (1992) replicated Woodrow's experiments. "The technological resources for conducting this research are dramatically more sophisticated than those which Woodrow had available". At variance with Woodrow, Rice (1992: 198) showed that variations in pitch do lead to a significant shift towards iambic groupings. Coming back to verbal rhythms, spoken language consists of syllables of varying duration. Schramm (1935), Fry (1958), and Chatman (1965) demonstrated that the acoustic cue to linguistic stress is a complex of pitch, duration, and loudness, in that order of decreasing effectiveness. Usually, at least two of these three components are present. If pitch differences are irrelevant to grouping direction and duration differences are more effective in stress perception than amplitude differences, end-accented meters should be more natural in poetry in a variety of languages. If variations in pitch also lead to a significant shift towards iambic groupings, it should reinforce this effect.

Aristotle had in mind a metric system based on duration differences. In English and in many other modern Western languages there is a prevalent intuition that in syllabotonic metre too, the iambic is more natural than the trochaic (since Fry found that duration is a more effective cue for stress perception than intensity, this too is explained by Woodrow's findings). In a completely different cultural tradition and different metric systems, in Mediaeval Arabic and Hebrew poetry in Spain, based on the alternation of longer and shorter units, there is a huge number of metres available to poets. I have found that, nevertheless, Mediaeval Hebrew poetry is dominated by one end-accented metre (Tsur, Bentov 1996); Golston and Riad (online) found that Arabic poetry too is dominated by end-weighted metres. I hypothesized that this is the result of some natural selection, to conform with the constraints of the cognitive system.

In this context, however, there is a disconcerting issue. The natural selection suggested here works well in some poetic traditions, but other traditions force rigid limitations upon poets and prevent them from preferring the metrical patterns that have a good fit to the natural constraints of cognitive economy. For instance, the venerable Greek and Roman epic tradition is dominated by the dactylic hexameter ("the heroic rhythm"). The dactylic foot is the least natural of the most frequent feet; namely, the iambic, the trochee, the anapest and the dactyl. The trochaic and the dactylic feet are relatively unnatural because the strong position (longer syllable) precedes the weak one(s). The

dactylic is less natural than the trochaic, because two weak positions lean back upon one strong position. This would conform with Aristotle's description of these metres. Why should, then, precisely that rhythm prevail and multiply that has a poor fit to the constraints of the cognitive system, that is, is the least natural of the rhythms? I found the solution to this riddle only recently, when I re-read, for a different purpose, Aristotle's paragraph.

Aristotle claims that "of the various rhythms, the heroic has dignity" and "the power of taking the hearer out of his ordinary self". In other words, the heroic action does not demand the most natural rhythms, but those that take the hearer out of his ordinary self – i. e., precisely the least natural metre. This is how the most "dignified" rhythm is generated, so as to support the intense human quality of the epic. The "heroic rhythm" (the dactylic hexameter) is the most dignified one because of its deviation from the commonplace "tones of the spoken language". Poor fit may have its own expressive value. One may even assume that poets sometimes deliberately seek out the conventions that have a poor fit, for effects that the Structuralists would call "marked". Now notice this too: In what Aristotle calls "the heroic rhythm", the dactylic hexameter, in most parts of the verse line a spondee may be substituted for a dactylic foot. In other words, the heroic rhythm consists of two kinds of feet that, for different reasons, may suggest a dignified quality.

Stress Maxima in Weak Position

One of the unique features of my work in prosody is my handling of stress maxima in weak position. I will try to explain this in a nutshell, and then point out its emotive implications.

Morris Halle and Samuel Jay Keyser (1971) proposed in their generative theory an exceptionally parsimonious criterion for distinguishing all "metrical" lines from all "unmetrical" ones, assuming that this criterion is somehow internalized by poets and readers. The iambic pentameter line consists of an abstract pattern of regularly alternating weak and strong positions, upon which the sequences of linguistic stresses are "mapped". The "stress maximum" is a theoretical construct, defined as "a stressed syllable between two unstressed ones, within the same line and the same syntactic constituent". The phrase "a gárden" contains a stress maximum; "a bíg gárden" contains no stress maximum, because neither of the two stressed syllables occurs between two unstressed ones – they "neutralize" each other. All mappings are "allowable", except one: a stress maximum in a weak position, that renders the line unmetrical, as in the following lines:

7

14. How many bards gild the lapses of time!
(Keats, "How many bards gild the lapses of time")

7

15. And made him bow to the gods of his wives (*PR*, 171)

7

16. Burnt after them to the bottomless pit
Milton, *Paradise Lost*, VI. 865–866

7

17. With them from bliss to the bottomless deep (*PR*, I. 361)

7

18. And whelm on them to the bottomless void
(Shelley, *Prometheus Unbound*, III. i. 76)

7

19. Buffet and scoffe, scorge, and crucifie mee (Donne, Holy Sonnet 11. 2)

I have found that the distribution of the violating stress maxima is far from random. Over sixty instances of stress maxima in weak positions have been recorded in iambic pentameter lines, in major English poetry. Two thirds of them occurred in the seventh position (out of four positions available for violation). This suggests that the distribution is not random, and that poets like Milton, Shelley and Keats assumed that their readers can perform such lines rhythmically. I predicted that experienced readers will tend to agree that a verse line with a stress maximum in the seventh position *can* be performed rhythmically. The solution to the perceptual problem will arise not with reference to the isolated stress maximum, but within a larger group. Such groupings are the performance patterns available to the reciter (Halle and Keyser declare that they have nothing to say about how such lines should be performed). If a reader is requested to read the line *rhythmically*, so as to preserve the stress pattern of the words and as much of the metre as possible, he is likely to group together, emphatically, the last four syllables and segregate the group from the preceding context. In other words, he will foreground in his performance a unitary perceptual group called "stress valley". A stress valley is a cluster of four syllables; in terms of Gestalt theory it has a closed symmetrical (that is, "good") shape: two stressed syllables embrace two unstressed ones, as in "Píty the wórld" or "bóttomless pít". Such a perceptual organization may save mental processing space, needed for the perception of the conflicting linguistic and versification patterns simultaneously. A stress valley that begins in the seventh position ends in the tenth position, imposing upon the line an exceptionally strong closure. I have found that experienced readers of poetry did indeed tend

to foreground such a stress valley; they were surprised to discover that rather than playing down the violating stress, they all tended to overemphasize it.

In what follows, I will give first an example of what I *don't* mean by "the expressive potential of stress valley", and then briefly suggest *my* conception of it, when initiated by a stress maximum in the seventh position. Consider Excerpt 14 above. The first syllable of ***lap****ses* in this line constitutes a stress maximum in a weak position; according to the Halle-Keyser theory, this renders the line unmetrical. Halle and Keyser attempt to "save" this line as a "metrical lapse", a kind of onomatopoeia, a metric joke. "The line is literally what it speaks of figuratively, a 'lapse of time'" (1971: 171). According to the conception of performance outlined here, confirmed by a great number of readings, such configurations as the four syllables of *lapses of time* can be performed rhythmically, by grouping them together. This renders the line acceptable, and the *ad hoc* explanation of "metric joke" becomes superfluous. Keats and Halle and Keyser use "lapses" in different senses and the "metric joke" construal of the deviation is far-fetched.

My solution to the problem relies on Leonard B. Meyer's discussion of emotion and meaning in music (1956). Emotion or affect is aroused, Meyer says, when a tendency to respond is arrested or inhibited (14). The pleasantness of an emotion seems to lie not so much in the fact of resolution itself as in the belief of resolution – the knowledge, whether true or false, that there will be a resolution (19). That is why we can know whether an emotion is pleasant or unpleasant before it is actually over (that is, before apprehension is dispelled, or stability is achieved). "The sensation of falling through space, unconditioned by any belief or knowledge as to the ultimate outcome, will, for instance, arouse highly unpleasant emotions. Yet a similar fall experienced as a parachute jump in an amusement park may, because of our belief in the presence of control and in the nature of the resolution, prove most pleasurable" (20). Now a stress valley beginning with a stressed syllable in a weak position and ending in a strong position at precisely the most stable points of the pentameter line (in the tenth or the fourth positions), may initiate an experiencing of such a "pleasurable apprehension". Loss of control is experienced during three syllables; but one also knows that control and stability will be regained at the fourth unit, where the stress pattern and the metric pattern have a coinciding downbeat, and the metre becomes fresh and new. In the verse lines in which the first syllable of "bottomless" occurs in the seventh position, anxiety is much stronger, there is a greater danger that the line will return to chaos, than when a stress valley begins in the first position, because it involves a stress maximum in a weak position; thus, what applies to a stress valley beginning in the first position is much more forcefully valid here.

How does a listener know, before the stress valley is completed, that there *will* be a coinciding downbeat? Speech processing is governed, at any given time, by immediate memory and anticipation. To give just one example of anticipation, [d] is a voiced stop; its enunciation consists of a gesture articulating a [t] and the activation of the vocal folds. This requires the prolongation of the preceding vowel, to foreground the contrast between a (voiced) vowel and a voiced stop. When a vowel is prolonged, the listener anticipates a voiced stop and hears a [d] even if actually a [t] is articulated. Likewise, Cooper and Meyer observe that "in musical performance, the placing of some extra accent may affect the grouping of sounds. […] [A]n accent on a weak beat, presents the group as end-stressed" (1960: 8). When a reciter overemphasizes (rather than downplays) a stress maximum in the seventh (weak) position, he expects an exceptionally strong stress in the tenth (strong) position. And so does the listener.

The stress valley has no semantic meaning, only perceptual dynamics. But this dynamics may generate a combinational potential, that is, a potential to combine with semantic elements that are relevant in one way or other to that dynamics. "Downward movement, falling", for instance, has an element of loss of control; but in the present instances, this loss of control may be pleasurable, because the reader believes that the stress valley and the pairs of iambic feet will have a coinciding downbeat, where stability and control will be regained – even though the "pit", the "void", the "deep" are "bottomless"; that is, control can be regained in the stress valley only, not in the endless fall. It makes us *perceive* the loss of control but, by the same token, it gives false security, to face it.

Applying, then, Leonard B. Meyer's phrases to stress maxima in the seventh position, this infringement inspires the reader with "awe, apprehension, and anxiety" that the utterance may escape back to chaos, "arousing powerful desires for, and expectations of, clarification and improvement". These desires and expectations are fulfilled, precisely, in the last position of the line, generating a strong feeling of closure. The line becomes well shaped and, paradoxically, at the same time, near-chaotic. Hence its strong emotional impact. The feeling of uncertainty, of "anxiety", as it were, is felt in the active violation of metre by an unsupported stressed syllable followed by unstressed syllables of such polysyllables as *crúcifie* or *bóttomless*, where they must lean back on that broken reed of a stress maximum in the seventh position, or one must wait until regularity is reasserted again, in the tenth position.

In Excerpts 16, 17, 18 above, *bót-* is a stress maximum in a weak position, adding momentum to the feeling of "anxiety". Considering the relative scarcity of stress maxima in weak positions, these examples – whether independently arrived at, or imitated by Shelley from Milton – cannot be dismissed as insignificant.

They are the more remarkable since the poets could easily have avoided the stress maximum in a weak position – by using "to bottomless abyss", for example.

I have emphasized above that the pattern illustrated here may *appear* to have an iconic impact, because what we have is not exactly iconic; it is more accurately handled in terms of "individuation of a general psychological atmosphere". The "falling" analogue is not part of the metric pattern; it is merely a metaphor to suggest a peculiar psychological atmosphere of insecurity and anxiety, which are perceptual qualities of the metric shape under discussion. This metric shape is associated with a feeling of momentum and craving for stability that may combine with any content and lend impetus to such expressions as "crucifie mee", or almost any other instance quoted here. When it combines with "bottomless pit" and its near-synonyms, the feeling of insecurity and anxiety and the craving for stability may combine with the content of the line, reinforcing each other. In Halle and Keyser's handling of "the lapses of time" the parallel between metric structure and contents crucially depends on the words by which we describe the metric figure: if we describe it as "metric lapse", the parallel exists; if we describe it as "metric deviance", it does not exist. Moreover, it also depends on assigning to the word "lapses" a meaning that is different from the one suggested by the context. My discussion of "the bottomless pit", by contrast, concerns an *atmosphere* of anxiety generated by the loss of control caused by the extreme metric deviation, "arousing powerful desires for, and expectations of, clarification and improvement". This is a possible source of a sense of "momentum" seeking "focal stability".

Tarlinskaja and the Stress Valley

I have said that Marina Tarlinskaja's work in metrics is diametrically opposed to mine in many respects; among others, it is strongly meaning-oriented and confirmatory-quantitative. Perceived effects are not within the scope of her research. It is based "not so much on insight and intuition as on wide quantitative analyses of observable facts". In spite of this, our findings are considerably overlapping, but with quite different implications. In her 1987 paper "Rhythm and Meaning: 'Rhythmical Figures' in English Iambic Pentameter, Their Grammar, and Their Links with Semantics" she touches on issues which I treat under the heading of "stress valley" (but do not involve a stress maximum in a weak position).

Consider the first two examples from a group of lines quoted by Tarlinskaja (1987: 20), in my metric notation: "To stand in thy affairs, fáll by thy síde" (Sh.

W S W S

Son. 151.12); "fáll like amázing thunder on the casque"(Sh. *R2* 1.3.81), and so forth. I have marked in these lines the linguistic stresses and the underlying weak and strong positions in a stretch of four syllables. In the terminology of the present study these are "stress valleys" beginning in the first or seventh (weak) position and ending in the fourth or tenth (strong) position. While in my work the group of four constitutes the unit of analysis, Tarlinskaja refers only to the first two syllables of these groups as a metric figure, labelling them as WS, that is, a stressed syllable in a weak position and an unstressed syllable in a strong position. It would appear that Tarlinskaja was interested here only in the deviating portion of the line. Rhythmical figures may stretch for her over as far as 5 and more syllables; but in these instances she focuses on the two deviating syllables only. By contrast, I was interested in the perceptual unit in which the deviance is accommodated. She is concerned with the observable facts, not with how such figures should be rendered acceptable in an iambic context. This difference is in perfect harmony with her statistical, and my cognitive approach. Tarlinskaja found by statistical means what are the meanings typically associated with this figure. One of them is, she says, "motion downward". All the examples she quotes in this group contain the word "fall" or "fell" in a weak position. But "motion" and "falling" is just one of the most frequent semantic areas coupled with this rhythmical figure; the verb is frequent, but not obligatory; other parts of speech may appear, but the context may still be "motion", and the verb of motion may be absent, or placed outside the figure. Tarlinskaja offers the following explanation for this association of "downward motion, falling" with this metrical figure: "The semantic component 'falling', so frequent in the figure WS-1, probably has something to do with the accentual-syllabic structure of the figure itself, which usually begins a verse line or a phrase within the line: it is a stressed syllable followed by two unstressed ones; possibly this arrangement does produce a physical impression of a heavy weight falling down". It will be remembered that with reference to "bóttomless pít" and its near synonyms in Milton and Shelley I argued that the metric figure with a stressed syllable followed by two unstressed ones, *beginning in a weak position*, does not contain the falling analogue, but displays a general sense of loss of control; the fourth, stressed syllable in a strong position, in turn, yields (false) security that enables to face the anxieties associated with endless fall. The word "fall" does not occur in these lines, but the violent downward motion *is* there. It is rather the adjective "bottomless" that occupies the critical metrical positions, reinforced by the metric figure's sense of loss of control.

The main difference between Tarlinskaja's and my own approach seems to be, in this respect, that while she conjectures some hidden link between the metric

figure and the specific meaning "vigorous fall", I discern a general perceptual dynamics of "loss of control" that can be individuated by association with a variety of meanings. The present conception assumes that no amount of "observable facts" in the text may suggest the nature of that dynamics. For this, one must assume the immediate responses of a human perceiver. It is also obvious that the answer should be sought in the *structure* of signs that have no predetermined semantic meaning. Consequently, Leonard B. Meyer's analysis of emotion and meaning in music (1956) as discussed above may be the clue to this issue.

Tarlinskaja quotes 17 lines that contain such figures, with "fall" or "fell" in the critical weak position, by poets ranging from Shakespeare, through Pope, Swift, Byron, Shelley, Wordsworth, to Arnold. 13 of the resulting stress valleys end in the fourth position, 4 in the tenth. One of the latter does not belong to this discussion, because it occurs in an iambic hexameter line, beginning immediately after the caesura. In another group, with the verbs "fly", "run", "rush" (that is, indicating vehement movement *away*) Tarlinskaja quotes 8 lines, by Shakespeare and Shelley; in 5 of them the stress valley ends in the fourth position, in 2 in the tenth position, and only in 1 in the eighth position. Thus, out of 24 pentameter lines quoted in these two groups, only in one line (by Shelley) the stress valley ends in a position other than fourth or tenth (that is, at the unmarked caesura and the line ending).

To sum up. I have propounded a qualitative "perceived effects" approach to the contribution of meter and rhythm to emotion in poetry. I have briefly compared it with John A. Jones's disguised impressionistic approach, and to three thoroughly systematic works: Marina Tarlinskaja's large-scale statistical "meaning-oriented" analysis, Benjamin Hrushovski's structuralist work focusing on four types of logical relationship between sound and meaning that, nevertheless, implicitly acknowledges that speech sounds may have inherent (sometimes conflicting) perceived effects; and to Maria Kraxenberg's quantitative study of sound–emotion associations. One of my main assumptions was that sound effects cannot be reduced to meanings: they can only generate some general psychological atmosphere that may be individuated by meaning into a variety of more specific emotional qualities. While emotional meanings are subject to understanding, emotional qualities are subject to immediate perception. The emotional quality of a poem consists in a structural resemblance between some emotion and a poetic text. We have explored the contribution of meter and rhythm to this resemblance.

References

Aristotle. *The Rhetoric of Aristotle,* tr. W. Rhys Roberts. http://libertyonline.hypermall.com/Aristotle/Rhetoric/Rhetoric.html

Arnheim, Rudolf 1967. *Art and Visual Perception.* London: Faber.

Beardsley, Monroe C. 1958. *Aesthetics: Problems in the Philosophy of Criticism.* New York, Burlingame: Harcourt, Brace & World.

Berkovich-Ohana, Aviva; Glicksohn, Joseph; Ben-Soussan, Tal Dotan; Goldstein, Abraham 2016. Creativity is Enhanced by Long-Term Mindfulness Training and is Negatively Correlated with Trait Default-Mode-Related Low-Gamma Inter-Hemispheric Connectivity. In: *Mindfulness* 8(3), 717–727.

Bouwsma, Oets Kolk 1961. The Expression Theory of Art. In: Philipson, Morris (ed.), *Aesthetics Today*. Cleveland & New York: Meridian Books, 145–168.

Chatman, Seymour 1965. *A Theory of Meter.* The Hague: Mouton.

Duffy, Elizabeth 1968 [1941]. An Explanation of Emotional Phenomena without the Use of the Concept Emotion. In: Arnold, Magda B. (ed.), *The Nature of Emotion*. Harmondsworth: Penguin, 129–140.

Fowler, Roger 1966. 'Prose Rhythm' and Metre. In: Fowler, Roger (ed.), *Essays on Style and Language.* London: Routledge & Kegan Paul.

Fry, Dennis B. 1958. Experiments in the Perception of Speech. In: *Language and Speech* 1, 126–151.

Glicksohn, Joseph; Tsur, Reuven; Gootblatt, Ch. 1991. Absorption and Trance-Inductive Poetry. In: *Empirical Studies of the Arts* 9(2), 115–122.

Golston, Chris; Riad, Tomas. The Phonology of Classical Arabic Meter. http://zimmer.csufresno.edu/~chrisg/index_files/ArabicMeter.pdf

Guilford, Joy Paul 1970 [1959]. Traits of Creativity. In: Vernon, Philip Ewart (ed.), *Creativity*. Harmondsworth: Penguin, 167–188.

Halle, Morris; Keyser, Samuel Jay 1971. *English Stress*: *Its Growth and Its Role in Verse.* New York: Harper and Row.

Hepburn, Ronald W. 1968. Emotion and Emotional Qualities. In: Osborne, Harold (ed.), *Aesthetics in the Modern World.* London: Thames and Hudson, 81–93.

Hrushovski, Benjamin 1980. The Meaning of Sound Patterns in Poetry: An Interaction View. In: *Poetics Today* 2(1a), 39–56.

Jakobson, Roman 1960. Closing Statement: Linguistics and Poetics. In: Sebeok, Thomas A. (ed.), *Style in Language*. Cambridge, Mass.: The MIT Press, 350–377.

Jakobson, Roman; Fant, C. Gunnar M.; Halle, Morris 1952. *Preliminaries to Speech Analysis: the Distinctive Features and their Correlates.* Cambridge, MA: The MIT Press.

Margolis, Joseph 1962. The Logic of Interpretation. In: Margolis, Joseph (ed.), *Philosophy Looks at the Arts: Contemporary Readings in Aesthetics.* New York: Charles Scribner's Sons, 108–118.

Meyer, Leonard B. 1956. *Emotion and Meaning in Music.* Chicago: Chicago University Press.

Radnóti, Miklós 1943. *Orpheus Nyomában*. Budapest: Pharos.

Schramm, Wilbur L. 1935. *Approaches to the Science of English Verse.* Iowa City: Iowa University.

Sibley, Frank 1962. Aesthetic Qualities. In: Margolis, Joseph (ed.), *Philosophy Looks at the Arts*: *Contemporary Readings in Aesthetics.* New York: Scribner, 63–88.

Snyder, Edward D. 1930. *Hypnotic Poetry: A Study of Trance-inducing Techniques in Certain Poems and its Literary Significance.* Philadelphia: University of Pennsylvania Press.

Sweetser, Eve 2006. Whose Rhyme is whose Reason?: Sound and Sense in Cyrano de Bergerac. In: *Language and Literature* 15(1), 29–54.

Tarlinskaja, Marina 1987. Rhythm and Meaning: "Rhythmical Figures" in English Iambic Pentameter, Their Grammar, and Their Links with Semantics. In: *Style* 21(1), 1–35.

Tellegen, Auke 1981. Practicing the Two Disciplines for Relaxation and Enlightenment: Comment on 'Role of the Feedback Signal in Electromyograph biofeedback: The Relevance of Attention' by Qualls and Sheehan. In: *Journal of Experimental Psychology*: *General* 110(2), 217–226.

Todd, Henry J. 1970 [1809]. *The poetical works of John Milton, with notes of various authors*. London: Law and Gilbert.

Tsur, Reuven 1978. Emotions, Emotional Qualities and Poetry. In: *Psychocultural Review* 2, 165–180.

Tsur, Reuven 2006. Delivery Style and Listener Response in The Rhythmical Performance of Shakespeare's Sonnets. In: Hogan, Patrick Colm; Pandit, Lalita (eds.), *Cognitive Shakespeare: Criticism and Theory in the Age of Neuroscience* (*College Literature* 33(1)), 170–196.

Tsur, Reuven 2008a. Comparing Approaches to Versification Style in *Cyrano de Bergerac*. In: *Cognitive Semiotics* 2, 146–168

Tsur, Reuven 2008b. *Toward a Theory of Cognitive Poetics*. Second, expanded and updated edition. Sussex Academic Press: Brighton and Portland.

Tsur, Reuven 2017. *Poetic Conventions as Cognitive Fossils*. Oxford: Oxford University Press.

Tsur, Reuven; Bentov, Yehosheva 1996. The Rhythmic and Strophic Organization of Mediaeval Hebrew Poetry (A Cognitive Approach). In: *Empirical Studies of the Arts* 14, 183–206.

Wellek, René; Warren, Austin 1956. *Theory of Literature*. New York: Harcourt, Brace & Co.

Wimsatt, William K.; Beardsley, Monroe C. 1959. The Concept of Meter: An Exercise in Abstraction. In: *PMLA* 74(5), 585–598.

Woodrow, Herbert 1911. The Role of Pitch in Rhythm. In: *Psychological Review* 18(1), 54–77.

Woodrow, Herbert 1951. Time Perception. In: Stevens, Stanley S. (ed.), *Handbook of Experimental Psychology*. New York: Wiley, 1234–1236.

Youmans, Gilbert 1989. Milton's metre. In: *Phonetics and Phonology* 1: *Rhythm and Meter*. New York: Academic Press, 341–379.