

VIP-RADAR: A MODEL FOR THE PHONETIC STUDY OF POETRY READING

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ABSTRACT

The prosody of a poetry reading is comparable to a musical performance. However, experimental studies on this acoustic data finalized to deepen the music of the page through its vocal production still received little attention. The *Voices of Italian Poets* (VIP) project developed a model of Phonetic study for the poetry reading, created for Italian and yet applied to other idioms, based on the connection with music. The core of this methodology is the VIP-Radar, a graphical representation of the poem's recordings. Among its 20 indexes, 5 depend on musical praxis classification, inspired also by Baroque Rhetoric, in relationship to speech analysis. This is the case of *Synonymia & Palilogia* (intonation level), *Appoggiato* and *Articolato* (rhythmical level), and *Trattenuto* and *Accelerando* (timing dimension). VIP's interdisciplinary approach aims to be an innovative tool for poetry reading studies.

Keywords: Acoustic Phonetics; Music; Prosody; Poetry; Voices of Italian Poets

1. INTRODUCTION

Poetry reading, as well as a music concert, represents the last step of the composition and the living moment of the page. Performance sheds written art to light enabling the common listening with the audience and the last concretization of its musical form. Through the performance, the immortal form of art is reborn every time in a unique, unrepeatable, and new life, as a single event. In poetry, the page, as a sheet in music, represents the core of a performance: studying poetry reading and, in particular, its prosody, allows, as in music, to know more about the most musical literary form and its author.

Since the 1970s, prosodic research on poetry reading has grown in four areas, focusing on their languages. More in detail, we find the English-speaking school of Byers [1] [2] and Barney [3] [4] [5]; Bernstein [6]; Grobe [7]; MacArthur [8], and MacArthur *et al.* [9]. The German tradition is by Wagner [10], Meyer-Sickendiek *et al.* [11], Schauffler *et al.* [12]. The French approaches are by Puff [13], Rumsey [14], Martin [15], and the Italian

school goes from Bertinetto [16] and Schirru [17], to Colonna [18] [19] and Romano [20].

For Italian, the *Voices of Italian Poets* (VIP) project [18], which also includes the first Italian vocal archive for Phonetic research, developed a model of study for the poetry reading, created for Italian and yet applied to other idioms, based on the connection with music¹. The core of this methodology is the VIP-Radar, a graphical representation of the poem's recordings we go to introduce in this paper².

2. THE VIP-RADAR

The VIP-Radar aims to track the main features of poetry reading and represents an instrument for its qualitative analysis. Its creation required a specific terminology, identified and coined, inspired on the whole by music and its language, and functional in particular to the introduction of specific indexes detected for the description of the poetry prosody.

This model made it possible to draw a prosodic overview of the Italian poetry reading style of the last century, enabling also a comparison and quantitative analysis related to 18 authors of the 20th century, grouped into two sections: First (1tv) and Second (2tv) Radio-Television (8 in the 1tv and 10 in the 2tv).

To create the Radar graph, previously we annotated the selected audio materials (.wav, mono, 44100 Hz, 16 bit), following a protocol we go to explain (§2.1.), and then we extracted data, through a script and manually.

2.1. Annotation

The annotation took place using the PRAAT program and is structured on the following 4 levels, which highlight the relationship between text and prosodic realization: VS (*Verso*: "Verse"), EN (*Enunciato*: "Poetic utterance"), CP (*Curva prosodica*: "Prosodic curve"), PR (*Parola ritmica*: "Rhythmic word"). The identification of ENs and PRs occurs on a perceptual level. EN is an independent linguistic act, presenting a terminal boundary and a unitary prosodic signification, which may consist of a single or several internal sections. CP is an inter-pausal section, whereas PRs are tonal-accentual units, with rhythmical cadence falls,

including one or more words, phonetically produced in only one unit with strong stress.

Part of the annotation system also concerns the question of pauses: an evaluation of pauses according to their length was carried out in a general indicative measurement. Specifically, we identified short pauses <pb>, medium pauses <pm>, long pauses <pl>, very long pauses <pll>, and reset pauses <P> (coinciding with the end of the verse). We report in Fig. 1 a sample of audio, including the 4 annotation levels.

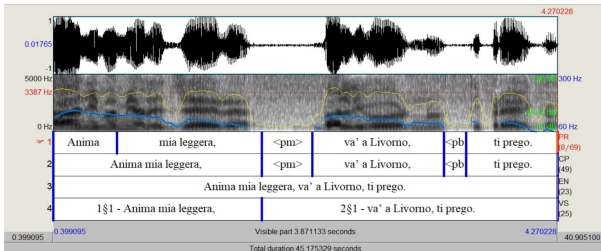


Figure 1: PRAAT window of annotation example.

2.2. The indexes

We present the two main categories included in the VIP-R: parameters related to the prosodic structure and organization; phonetic and stylistic indexes. The organizational indexes are the following:

- *Verse-curve* VS(CP), prosodic curve (CP) coinciding with the verse on the page (VS);
- *Hemi-verse curve* CP(VS), prosodic curve (CP) including a portion of the verse (VS);
- *Inter-verse curves* CP(VS)CP, prosodic curve (CP), placed between two verses (VS) and including a portion of both;
- *Bi-/Poly-verse curve* VS(CP)VS, prosodic curve (CP) entirely including two or more verses (VS).

The stylistic indexes are the following:

- *Pitchspan*: melodic extension (in semitones);
- *Rel_meanpitch*: average relative frequency f_0 (in Hertz);
- *Rel_meanI*: average relative loudness (in dB);
- *Voice Setting Changes*: tonal or register jumps on the total CPs;
- *Speech Rate*: ratio of total phonetic syllables and CPs duration;
- *Accelerando*: perception of acceleration in the Speech Rate, detected at the perceptual level;
- *Trattenuto*: perceived slowing down Speech Rate;
- *Plenus*: ratio of total CP duration and P (pauses);
- *Focus*: focused intonations;
- */Da//*: declarative intonation (assertive and poetic declarative, with a terminal boundary on a final medium-low level);

- *Interrupt*: fragmentary pronunciation in CPs and/or in the use of pauses;
- *Appoggiato*: from musical language, stressing mode, marking the CPs by PRs;
- *Articolato*: from musical language, stressing mode marking the ENs by CPs, using pauses;
- *Synonymia & Palilogia Intonation*: rhetorical elements in the CPs intonation through figures of repetition on the same tone – *palilogia* (“palillogy”) – or on different tones – *synonymia* (“synonymy”), with the possibility of *variation*. Expression from the Baroque musical lexicon;
- *Enjambment*: prosodic realization of the enjambment by a pause;
- *Plan*: planning of prosodic poetic speech, given by the ratio of EN and VS.

Fig. 2 and 3 are examples of VIP-Radar: we will focus on musical indexes composing it.

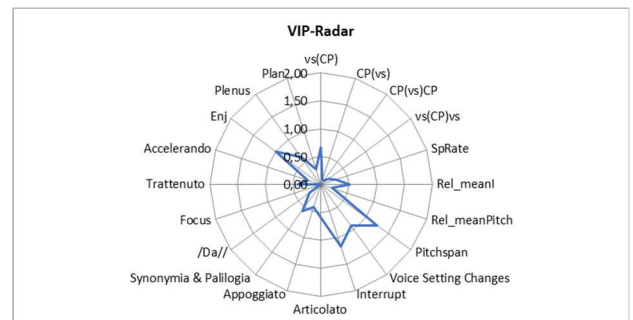


Figure 2: VIP-Radar example (reading of *Sono una creatura* by Giuseppe Ungaretti).

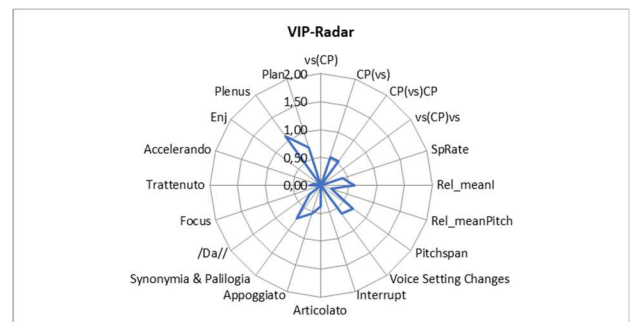


Figure 3: VIP-Radar example (reading of *Alba* by Giorgio Caproni).

2.2. Musical Indexes

Musical indexes are borrowed from musical agogics and praxis and are the following: *Synonymia & Palilogia* (intonation level), *Appoggiato* and *Articolato* (rhythmical level), and *Trattenuto* and *Accelerando* (timing dimension).

More in detail, starting from the rhythmical level, *Articolato* is connected to the musical concept of *articulation* “articulation” (or more markedly *caesura*, more incisive on a semantic level), inherited

from the Baroque musical language, in which it indicates the divisions into *phrasings*, according to the choices of breath, functional to harmony and melody, and created by performance. It enables the enhancement of accents, melodic trends, and structure, necessary for the transmission of a message in a rhetorical work. In the 18th century, the reference was the literary punctuation (see Couperin [21], to justify the use of commas in the notation of his scores) and flows into a system defined by Mattheson [22] with the idea of *phrasing*. The production of musical articulations is linked to a specific technical and praxis modality and intention. The phrasing scansion allows underlining parts and internal significations, through a breathing division. Inspired by this, in this linguistic work, *Articolato* refers to the utterance scansion in prosodic curves: pauses turn out to be a determining element and accentuate on a macro-structural level major units with minor units, which contribute to making the reading more “breathy”. Therefore, a reading with more scansion in CP is more articulated.

Appoggiato, on the other hand, is a musical term that indicates not only a specific accentuation mode, through lengthening the duration and greater intention of weight and intensity of a note, but also a connection with the harmonic structure of the part in which it is. In our study, starting from musical reference, *Appoggiato* scans the microstructure of CPs in PRs, which, like on the score, are marked (with prominence and with tonal evidence). A reading in which the CPs present a greater number of PRs will be considered more *appoggiata*. *Articolato* is calculated as the ratio CP/EN and *Appoggiato* as the ratio PR/CP³.

The stylistic-rhetoric apparatus is not secondary in intonation. The index of rhetorical figures of intonation, specifically of repetition, is indicated as *Synonymia & Palilogia (Intonation)*, and takes up and extends Colonna [23], which draws on musicological studies of rhetoric (Civra [24] and López Cano [25]). In detail, this parameter is intended to show the frequency of repeated melodic movements on the same tone (*Palilogia*) or different tones (*Synonymia*), sometimes also with *variatio*. The consistent presence of intonation repetitions in poetic speech is a non-negligible element to take into account for this prosodic typology, based on a rhetorical composition as poetry⁴. Figg. 4 and 5 show an example from the same reading, the first in comparison with the second.

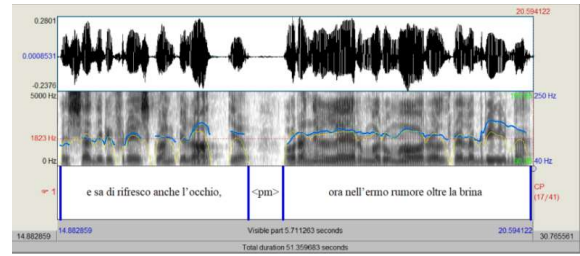


Figure 4: PRAAT window of *synonymia*.

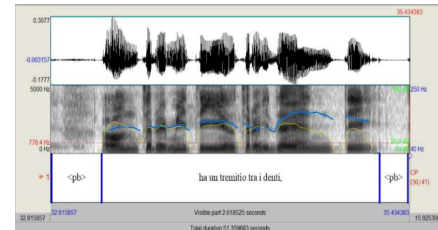


Figure 5: PRAAT window of *palilogia*.

Finally, *Trattenuto* and *Accelerando*, detected on a perceptual and subjective level, indicate the perception of a slower or faster tempo than the general, inspired by the musical term, often used in correspondence of movements or short passages with changes in velocity/agogics intentions.

2.3. Some analysis of musical indexes

The VIP corpus analysis, including 32 recordings by 18 authors (quite entirely of free metrics texts), showed that some changing behaviours, together with common aspects, emerged in the passage from the first to the second radio-tv [18].

In particular, a growing *Appoggiato* and decreasing *Articolato* have been detected in the transition over time. The VIP-*Appoggiato*-Boxplots in Fig. 6 show an interquartile *range* higher in the 2tv (together with quite higher mean and median), with symmetric distribution and minimum dispersion in the first quartile, high on the high values of the third quartile (with very high *outlier*). Major variability is detected in 2tv, whereas in the 1tv the distribution is asymmetric, the range is reduced and the variation is limited to a low level.

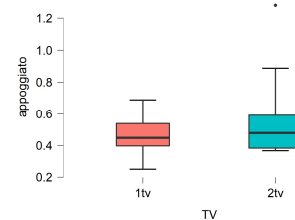


Figure 5: VIP-*Appoggiato*-Boxplots.

Considering the *Articolato* index, the central distribution appears higher in the 1tv, within an interquartile range extended over higher values than

in the 2tv and slightly wider. Both distributions appear asymmetrical, even though greater dispersion in the 2tv, in the first and third quartiles.

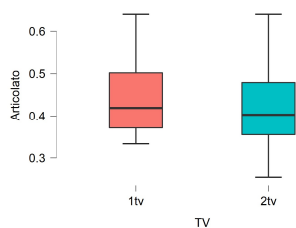


Figure 6: VIP-Articolato-Boxplots.

This comparison shows how the way of rhythmically marking the reading has changed over time, moving from a system that predominantly makes use of *Articolato* to one in which an *Appoggiato* style prevails. This data led us to support the hypothesis of a “prosodic accentual verse” (PAV), based on the theory by Fortini [26] of the Italian free verse as an accentual verse. PAV would be marked by PRs, more or less combined with the articulation level. In this way, the melodic-intensive-durative markings, associated with the reduction of silences, would scan the accentual/rhythmic prosodic system, creating dynamism in the unity of reading. Further considerations about text structure and meter are developed in [18].

This path is in line with what happened in music in the transition to an accentual notation, with a gradual loss of a quantitative system, during the transition from the Baroque rhetorical system to the Classical and, later, Romantic system. From a system in which the technique of “articulation” between musical phrases was functional to the marking of the accent itself, we move to a qualitative accent system, with intensive, dynamic, rather than “breathing” markings. The path in the structure of poetic speech would seem to be similar.

Finally, related to *Synonymia & Palilogia*, we found a consistent use of the repetition strategy: in particular, as Fig. 7 shows, 50% of the readings in 1tv made high use of *Synonymia & Palilogia*, as shown by the distribution concentrated on the highest band of the graph. Half of the readings in 2tv, on the other hand, are spread out over a wider range, oriented in a medium-high band: there is a greater heterogeneity in the frequency of repetition figures, more varied, as is also confirmed by the strong dispersion over low values (in the first quartile).

Furthermore, a wider analysis of the VIP-Radars showed that one of the most typical intonations, /Da// (assertive utterance, also coinciding with poetic declarative), represents one of the most repeated.

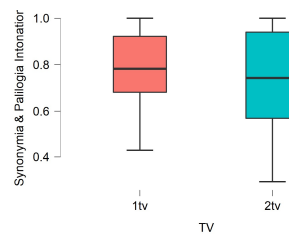


Figure 7: VIP-Synonymia & Palilogia-Boxplots.

This parameter makes it possible to note how important the repetitive element of intonation is, confirming the presence of a prosodic rhetorical apparatus of speech that overlaps with that of the written text. Instead of music, poetry intonation rhetoric is detectable only after performance and can be very detached from the page figures. Focused on repetition figures, this index suggests an attempt to return to original (melodic/rhythmic) formulas of poetry speech, connected to memory and orality.

Trattenuto and *Accelerando* gave as a result the presence of isolated high levels in readings, rather than slight records, revealing a reduced perception of speech rate changes or much-connoted styles.

The general VIP-Musical-Radar (Fig. 9), including only the musical indexes, confirms the many global convergences and variety of these. In particular, we find the globally high level of *Palilogia & Synonymia* and a global major level of *Appoggiato*, with isolated highest peaks.

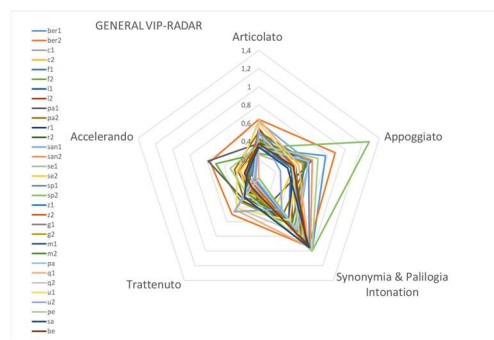


Figure 9: General-VIP-Musical-Radar.

3. CONCLUSION

The VIP-Radar enabled a qualitative image of a poetry reading, based on the strong connection between music and poetry prosody. We found common features, e.g. on a rhythmical level, showing a qualitative change in performance “praxis”, as well as common points on melodic and agogics levels. Together with rhetoric, they resulted to be an essential part of a phonetic study of poetry and, in synergy with the objective data analysis, need to be considered for more complete research on the poetry reading, and artistic performance strictly connected to the musical art since its origins.

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² Further levels of analysis, which we will not consider in this study, compose the methodology (e.g. VIP-EnjambmentLine; VIP-CP-P-Histogram, ecc.)

³ The index of *Articolato* and *Appoggiato* are reported on the radar on a 0-5 scale. Values <0.4 are considered low, ≥0.4, <0.6 medium, >0.6 high; >1 very high.

⁴ These intonations are identified perceptually, together with the visualization of f_0 curves on the spectrogram.