Exploring intonational patterns of poetic speech: Insights from a large corpus of German poetry

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This study investigates the intonational patterns of poetic speech in a large corpus of German poetry recitations. Previous studies have identified a number of intonational features that are typical for verse recitation in English, and modeled them in what they called “a formula for poetic intonation” [1,2]. Byers identified features such as a slow speech rate, short intonation units, more pauses, intonation units of relatively equal length, low average pitch, a narrow pitch range, simple falling melodies, and simple falling nuclear tones; Barney, building upon this formula, differentiated between general performance features and specific poetic characteristics and added echoes of pitch patterns to the latter (which was also reported by [3]). While these studies were limited to a small number of speakers and poems, advancements in computational methods now enable us to analyze larger corpora.

In our study, we investigate features of poetic intonation in a corpus comprising recitations of German poems collected within the project »textklang«.¹ We are interested in how prosodic features associated with poetry, such as speech rate and pitch range, may vary over time and differ depending on aspects such as length of poem or authorship. This investigation serves as the basis for refining our poetic speech synthesis models [4] to incorporate specific styles, speakers, authors, or epochs (allowing us to synthesize a recitation to sound, for example, like a Goethe poem read by a female speaker in the 1950s). Additionally, these models will be used in perception studies to explore the aesthetic effects and functions of the investigated features.

Our analyses encompass 1148 recitations of 682 German poems from the Romantic period, spoken by 120 different speakers (33 female) between 1951 and 2020. The corpus was automatically annotated at the level of both the written material (poem) and speech data (recitation) [5]. The annotations follow the GRAIN pipeline [6] combined with manual revisions for text-speech alignment. Pauses, pitch and duration values were extracted by means of the synthesis system Festival (University of Stuttgart version [7]). Intonation events (pitch accents and boundary tones) were automatically annotated as described in [8]. This extensive corpus makes it possible to revisit the concept of poetic intonation from a macro-analytic perspective.

For the study at hand, we calculated articulation rate as the number of syllables per second (excluding pauses), and recitation rate as the number of syllables per second over the length of the respective poem (including pauses). Pitch range was calculated over individual stanzas as the difference between the highest and lowest pitch in the middle of the respective syllable.

First results reveal significant variation within the investigated features that is highly dependent on the speaker. Nevertheless, we also identify speaker independent effects indicating diachronic developments in recitation patterns. Recitation rate appears to change over time and is significantly lower in the 1980s and 1990s (Fig. 1). Also pitch range differs in certain time periods, particularly between the 1960s (decrease compared to the 1950s) and the 1980s (increase, Fig. 2). Interestingly, these two trends are also found in the data of an individual speaker in our corpus (Gert Westphal) from whom we have multiple recitations spanning from the 1960s to the 1990s. In terms of formal aspects, we find that longer poems have a higher recitation rate (Fig. 3). Comparing a subset of the six most frequent authors in our corpus, we observe significant differences in recitation rates, with some authors (e.g. Schiller) being read at significantly higher rates than others (e.g. Goethe, Fig. 4).

These preliminary results show how a data-driven approach can provide insights into specific intonation features over time, based on the recited material and the speaker. Identifying such trends brings us closer to defining and investigating different recitation styles and their perception. In our talk, we will share additional findings on intonation features from an expanded analysis, including aspects like pause frequency. Furthermore, we will take a closer look at factors such as the speaker’s gender and, based on initial manual annotations, how the poem was recited in terms of emphasis and metrics.

¹ The interdisciplinary project »textklang« develops a mixed-methods approach for the systematic investigation of the relationship between written text and its sonic realization, cf. https://textklang.org/.
References


