AUTOMATIC RECOGNITION OF SOUND POETRY FEATURES

Burkhard Meyer-Sickendiek[1], Hussein Hussein[1], Timo Baumann[2]
[1]*Department of Literary Studies, Free University of Berlin, D-14195 Berlin, Germany*
[2]*Language Technoloy Institute, Carnegie Mellon University, Pittsburgh, USA*
{bumesi, hussein}@zedat.fu-berlin.de, tbaumann@cs.cmu.edu

Abstract: Our paper will focus on the computational analysis of "readout poetry" (Hördichtung) - recordings of poets reading their own work - with regards to the most important portal for international audio poems: the Berlin portal "lyrikline.org". To date, readout poetry was never analyzed systematically, this is why there is no scientific knowledge about the prosodic features of this genre. We just know that at least 80 percent of the poems on lyrikline have neither a rhyme nor a fixed metre such as Jambs or Trochees. But does this mean that they are completely free of rhythmic structures? To answer this question, we make use of the so-called "free verse prosody", a theoretical discourse developed in the US with regards to modern poetry developed by poets such as Whitman, the Imaginists, the Beat poets or today's Slam poets. All these authors have replaced the classical metric verse forms with a new prosody that is characterized by prose rhythms, everyday language, linguistic decompositions like in modern "sound poetry" (Lautdichtung) or musical styles such as Jazz or Hip-Hop.

Our project is funded by the Volkswagen Foundation from January 2017 to April 2020, within the Volkswagen-funding line "'Mixed Methods' in the Humanities?" The aim of the project is to develop a software for the digital classification of prosodic patterns in readout poetry by using the acoustic and textual data of Lyrikline. To date, we found 17 different rhythmical patterns, to be divided into 4 different categories: textual patterns, acoustic patterns, experimental patterns and decompositions.

In our paper, we will demonstrate the analysis of lettristic and phonetic decompositions, typical for modern "sound poetry" (Lautdichtung), developed by dadaistic poets like Hugo Ball and Kurt Schwitters or concrete Poets like Ernst Jandl, Oskar Pastior, or Bob Cobbing. This genre combines the "microparticles of the human voice" (Bob Cobbing, 1969), like the segments in Ernst Jandls sound poem "schtzngrmm" ("schtzngrmm / schtzngrmm / tttt / tttt / grrrmmmmmm / tttt / sch / tzngrmm") or Louis Zukofsky long poem "A" ("carefully / hy / phen / ated each / syllable / pours / in / the measure"). Based on the very effective prosody recognition of current speech technologies, we use relevant methods for the digital analysis of these rhythmic-prosodic features of "sound poetry". We first determine these lettristic and phonetic decompositions manually. Then, we want to detect and extract the features for digital pattern recognition based on machine or deep learning.

We will focus on three different aspects: 1) How to extract automatically the features of "sound poetry" (linguistic experimentation, word fragmentation, lettristic and phonetic decompositions)? 2) How to use machine learning techniques in limited datasets? 3) How to combine toolsets for speech anaylsis automatically?

Several tools will be used to extract these features, such as the Part-of-Speech (PoS) tagger from Stanford University, the CMUSphinx Speech-Recognition Toolkit for the forced alignment of audio and text data, the openEAR or openSMILE for the Extraction of acoustic features, and the data mining tool WEKA.