

## Lexicometric and Informational Measures in Historical and Literary Corpora

### Abstract

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How the frequency of words may be interpreted in the context of an informational analysis of textual corpora? To what extent the frequency values and distribution could be an indicator of the “amount of information”, the degree of “certainty” or of “informativeness” conveyed by a text? Are other factors, such as language and genre, influencing these informational measures?

The paper will address these questions from a comparative perspective. Two types of multilingual corpora (in Romanian, French, and English) are considered:

- a selection of minutes of plenary sittings (2005 to 2012) from the Digital Corpus of the European Parliament (DCEP–PV);
- a selection of poems by three authors (Eminescu, 2011; Hugo, 2009; Rossetti, 2005) from the Project Gutenberg.

The methodology consists of:

- a lexicometric analysis (part of speech tagging and lemmatization, corpus partitioning, frequencies and lexical tables for each part of a partition) by means of the TXM-Textometry software (Heiden et al. 2010);
- lexical tables import into Microsoft Excel and computing of three informational measures, entropy (1) (Shannon, 1948), energy (2) (Onicescu, 1966; Marcus, 1970), and informativeness (3) (adaptation of Carnap and Bar-Hillel, 1952; Dretske, 1999; Floridi, 2017), according to the following formulas:

$$H = -\sum_{i=1}^N p_i \log_2 p_i \quad (1)$$

$$\delta = \sum_{i=1}^N p_i^2 \quad (2)$$

$$INF = -\sum_{i=1}^N \log_2 p_i \quad (3)$$

where  $N$  represents the number of unique lemmas for each part, and  $p_i$  the probability of lemma  $i$  calculated as the relative frequency inside a part of the corpus partition.

The presentation will include a discussion of the methodology and results, and will conclude on the interpretative aspects of the experiments from a lexicometric and informational perspective.

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