

Awesome Code: Developing a Tool for the Analysis of Sound Patterns and Emotions in Early Modern Dutch Theatre Plays

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What did the Dutch theatre sound like in the Golden Age? Did comedies sound different from tragedies? Did angry men on stage sound different from angry women? How did queens in love sound in relation to servants in love?

My PhD project researches the role phonological patterns play in the expression of emotions in early modern Dutch theatre plays. This is a quantitative research project. It aims to include as many plays as possible but at least 200, covering the entire early modern period in the Netherlands from 1570 to 1800, in order to create a historical sound pattern timeline.

Informed by music theory, my hypothesis is that sounds serve as instruments for the expression of emotions. From this point of view historical developments in the expression of emotions should be visible in phonological patterns. To investigate and analyse these patterns in early modern Dutch, I will focus on theatre plays, since these texts were particularly designed to be performed on stage and are emotionally very explicit.

The method used for this specific research is packed in a tool (a script in Python) based on computational lexicological elements and historical phonological information.

I wish to demonstrate this tool in development to the DH participants to share the work in progress, discuss it and hopefully find new ideas that can help improve it.

The Python script (working title: *Awesome Code*) is based on the following components:

- Conversion of sounds into SAMPA (Speech Assessment Methods Phonetic Alphabet) standards and creating a visualisation for each phonological group (such as plosives, fricatives and other consonants as well as checked vowels, free vowels, diphthongs et cetera). The conversion is based on rules for each sound. Four different historical sound groups are distinguished.
- Count of sounds: counting the sounds sorted in various categories: time periods within 1570 to 1800, genre, author, characters and even categories within characters, distinguished by sex, age and occupation.
- Mining of emotional expressions
- An overview that combines visualisations of both phonological patterns and emotional expressions in order to analyse their supposed correlations.

Awesome Code uses xml files of the selected theatre plays provided by the Digital Library for Dutch Literature (DBNL) and the *Lemmatiser Tool* (Tagger) developed by the Institute for Dutch Lexicology (INL). Phonological information about early modern Dutch is mainly based on Van der Sijs 2004. At this point *Awesome Code* is able to deliver a promising 85% correct automatic historical translations of characters into SAMPA. This means that counting and analysis can be interpreted with a margin of error of only 15%. The development is an ongoing process. One of the next steps is to combine *Awesome Code* with HEEM, Historic Embodied Emotions Model (Leemans e.a. 2015).

Awesome Code will play a role in revealing the historical sounds of love, hate, anger and happiness. Counting and analysis of phonological patterns will help to discover how the history of emotional expressions on stage has evolved. In addition the data this tool creates could open other opportunities for research on sound patterns in texts.

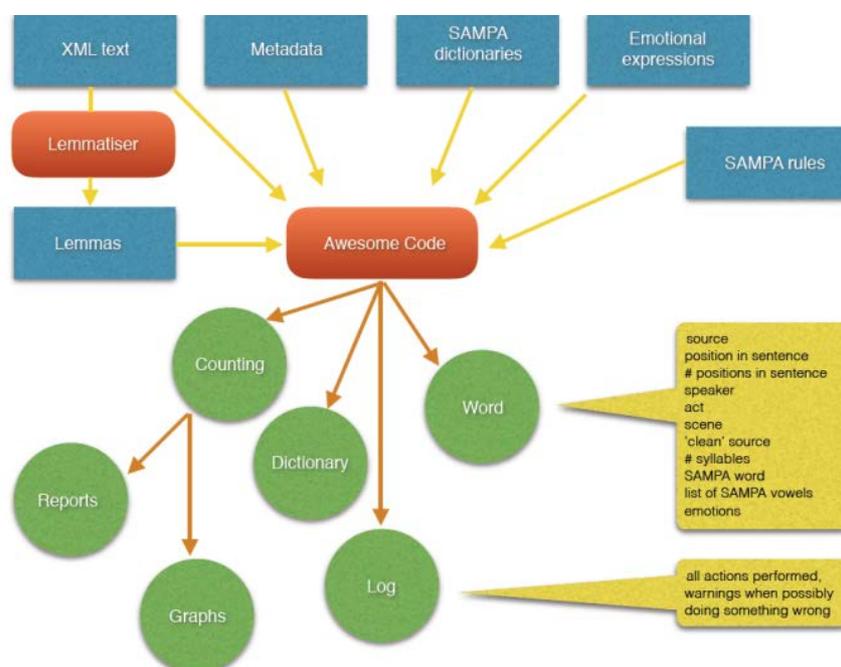


Figure 1: Visualisation of *Awesome Code*, a Tool for the Analysis of Sound Patterns and Emotions in Texts. Orange buttons represent tools, blue buttons represent input to *Awesome Code*, green buttons represent output of *Awesome Code* and yellow buttons provide additional information about Words and Logs that are part of the output of *Awesome Code*.

References

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