“O where is Romeo, saw you him to day?”: Using sonification and visualization in the exploration of Early Modern English literature metadata

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We present work on using the sonification of texts encoded with the Text Encoding Initiative (TEI) schema for exploratory data analysis.

In previous work, we discussed the use of the sonification to compare the editorial structures of two versions of a text, such as the Quartos editions of Shakespeare’s Hamlet [1]. In this work, we explore providing representations of the metadata as marked up. We hope to show the relative changes between the amount of time that each gender gets in a comparison of the genres within Shakespeare’s dramatic works.

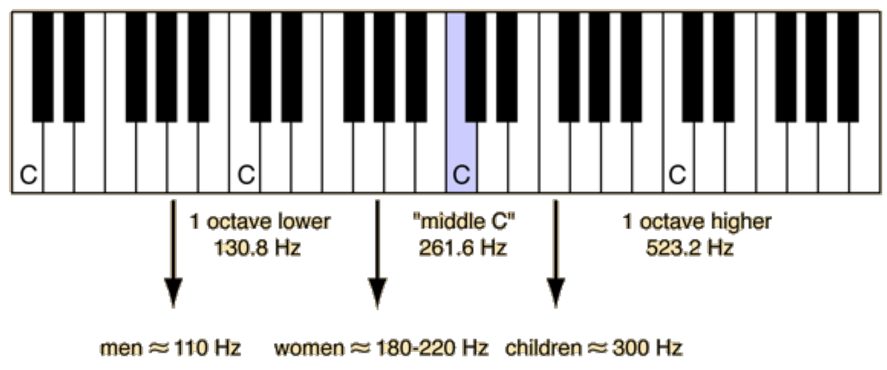
Visualising Speakers in Shakespeare

At the Shakespeare Hackday [3], we visualised an exploration of the First Folio edition of Hamlet using the open source XML [4]. We re-used an existing Javascript script that used the D3 library with a custom Wordpress plugin. We felt that using the attributes in the person tag would provide different facets to explore.

Sonifying Speakers by Gender

The TEI person element provides attributes for a speaker’s gender. Initially we used this to provide an overview of the gender division in the play through re-using the Wordpress plugin to create the data for the sonification tool.

Psychoacoustics provides an option for presenting the data in a different way. The average pitches for male and female voices are different with the mean pitch male voices at 125 Hz and women’s at 210Hz [2]. Using psychoacoustics, we aim to reduce the cognitive load on the listener.



Rod Nave, HyoerPhysics, http://hyperphysics.phy-astr.gsu.edu/hbase/music/voice.html

We created sonifications of the play’s editorial structure using tones and alternate sounds for the genders with the pitch changes. Using these pitches uses psychoacoustics to re-use the brain’s internal understanding of gender in voices to reduce the explanation required for the sounds.

In a second experiment, we augmented the pitches with different sounds. Using a shaker for male voices and sleigh bells for female voices, sounds using two dimensions were created.

Conclusion

This work extends our earlier explorations using the whole text as a hyperstructure. We use the gender as a filter to create more focused sonifications. We are able to listen to the different amount of time given to speaking parts given to each sex across the genres used in Shakespeare’s dramatic works.

We intend to develop the sonifications to investigate the use of audio icons, sounds that represent the underlying item, and earcons, tones or sounds like leitmotifs, for listeners.

Using different modalities allows us to create active and passive experiences. Visualization is better known for this work and has more techniques but we feel that the sound provides a valid alternative for future work and continuing exploration.

Acknowledgements

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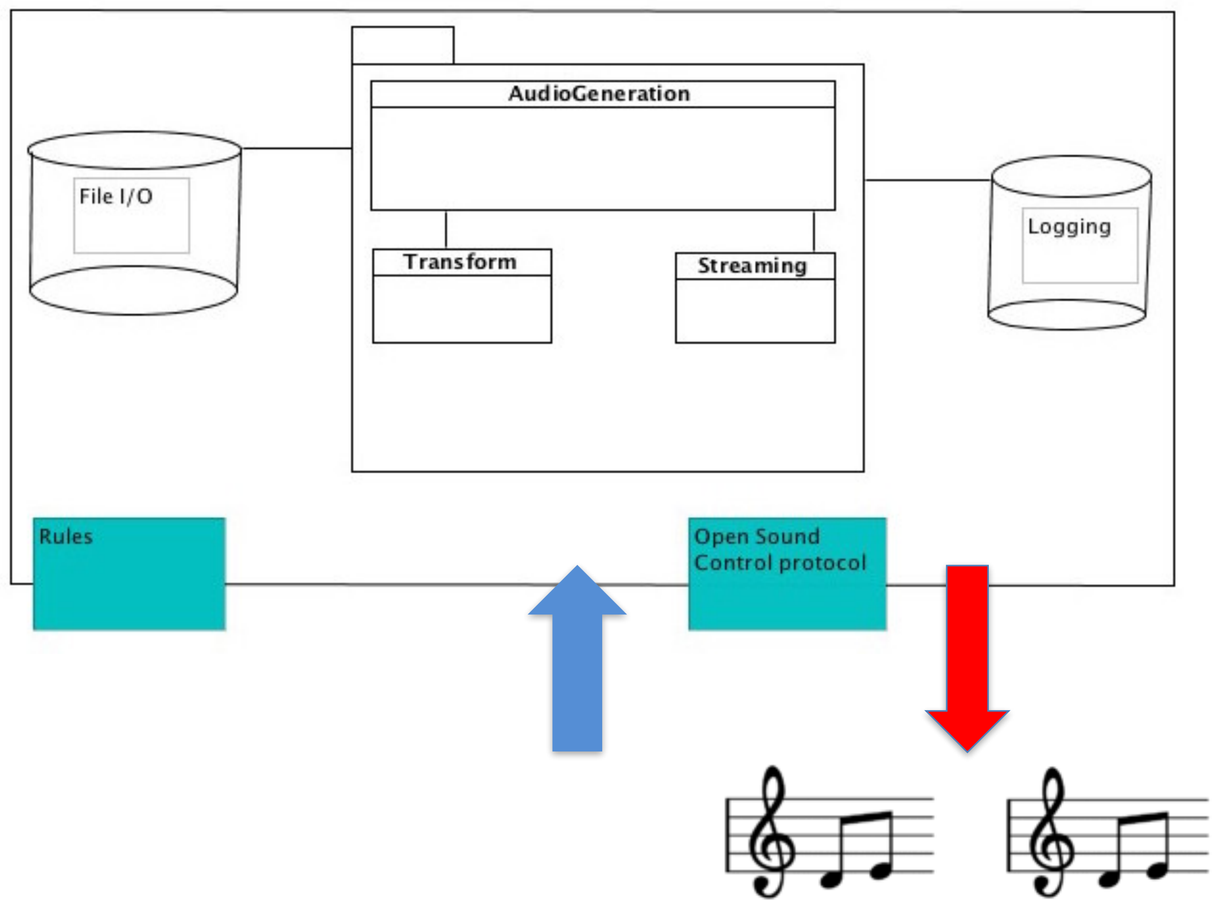
References

[1] Iain Emsley and David De Roure, (2015). It will discourse most eloquent music: Sonifying variants of Hamlet.
[2] Daniel Levitin, This Is Your Brain on Music: The Science of a Human Obsession (Atlantic Books, London, 2007), p23
[3] http://www.torch.ox.ac.uk/shakespearean-hackfest-0
[4] http://firstfolio.bodleian.ox.ac.uk/download/xml/F-ham.xml



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