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

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We present work in progress concerning the exploration of metadata using visualization and sonification using data from the Bodleian Libraries’ First Folio [1] and the Early English Books Online [2] (EEBO) projects.

Hearing the Variants

Our early experiments in sonification explored the Text Encoding Initiative (TEI) XML markup in variations of Shakespeare’s Hamlet between the Folio and the Quarto editions [4]. We looked for difference in these sonifications and simple visualisations.

Figure 1: Visualising the speaker’s role in the First Folio edition of Hamlet

Visualising Speakers in Shakespeare

At the Shakespeare event, we visualised an exploration of the First Folio edition of Hamlet using the open source XML. 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.

Exploring 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 plugin.

We felt that the sonification may allow us to illustrate more dimensions. Using the average pitches for male and female voices, 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.

Exploring Roles

Roles in Shakespeare are signified in multiple ways. We marked up Hamlet with the character roles and also the type of speech, whether it is verse, prose or has a rhyme scheme, as well as having assigned roles such as Prince, King or Queen.

We applied various colours to the types of line where these are marked up [Figure 1]. It provides a richer visualisation than gender and we linked it to a simple search function.

Searching an Early English Books Catalogue

The EEBO project is available on Github [3] as part of the project source files being made available. The main catalogue is included as a CSV file.

We want to know the amount of data within a catalogue and whether the matches are close to each other. Sonifying the searching for authors in the text to show the relative volume against the total volume in the catalogue allows us to answer questions of sparsity or richness of the search term in the data as it being searched by the algorithm.

We sonify each entry with one sound for an entry that does not match and use an alternate one for matches that gets louder as more data is found.

We return the visual results as a simple list so that it links to the data whilst creating a continual audio display as the search runs.

Conclusion

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.

As future work, 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.

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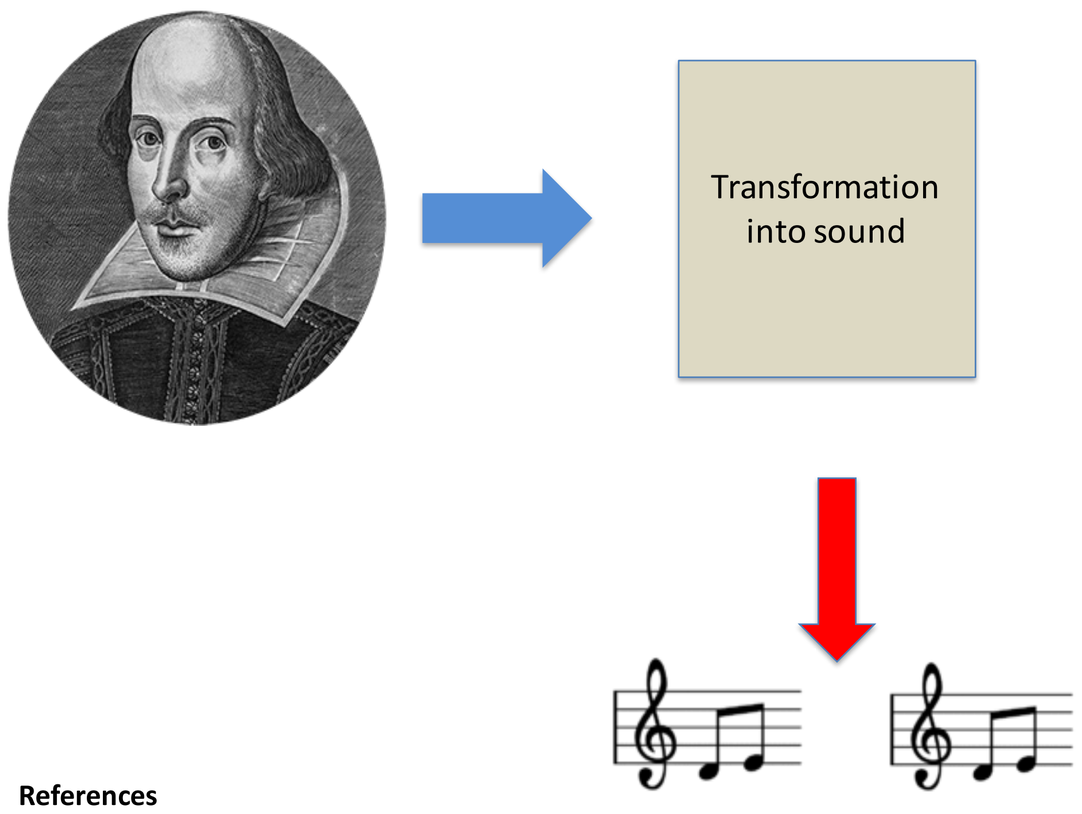

References

[1] First Folio home page, Digital facsimile of the Bodleian First Folio of Shakespeare's plays, Arch. G c.7, http://firstfolio.bodleian.ox.ac.uk/
[2] The Shakespeare Quartos Archive, http://quartos.org/
[3] Github, http://www.github.com
[4] Iain Emsley and David De Roure, (2015). It will discourse most eloquent music: Sonifying variants of Hamlet.

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