

Sonification Use Cases

Anne

Anne is a middle school science teacher. This month the class is learning about weather, and she has dedicated a unit to hurricanes. She has found that being able to visualize the material that she is teaching is helping some of her students understand the concepts, but she is not able to engage the entire class. She learns about a sonification tool that she could use through the inclusive design handbook. The tool allows Anne to input the data that she is working with and then visualize and sonify it interactively.

[the following sketch only addresses the sonification component of the tool]

Her dataset includes information about :

- Names of hurricanes
- Energy (ACE)
- Wind Speed
- Date
- Distance travelled a day

Anne decides to try out the sonification tool to see if she could use it in class.

She can organize her variables into categorical and continuous, and then associate them with different sound parameters.

First Anne places the hurricane names in the categorical section and the rest of the variables into continuous.

She can map the categorical variables onto different:

- Instruments
- voices
- rhythmic sequences
- spatial location

She can map the continuous variables onto:

- pitch
- tempo
- time
- volume
- density
- irregularity
- noise
- spectral energy distribution

First Anne picks different instruments for different storms. Then she connects energy with pitch and date with time. She selects a metronome option and sets it to every day. She clicks play. She hears the metronome start a beat. After a few second a piano begins to play at a low pitch and slowly rises and then begins to fall again. While the piano sound lowers in pitch, a guitar begins to play, this time the pitch rises much faster but doesn't rise quite as high as the piano. After the guitar stops playing, there are a few metronome ticks in silence and then a cello comes in. Anne continues listening until the sonification stops.

She then decides to play around with the variables. She keeps date with time, picks rhythm for storm type, tempo for energy and deselects the metronome. After a few seconds of silence a short rhythmic pattern comes in 'tap taptap tap tap... tap' the pattern starts speeding up, getting faster and faster and then slows back down again. As it slows down a different rhythmic pattern begins to play 'taptap tap taptap' it speeds up even faster, but doesn't get quite as fast as the first one. She listens until the sonification is finished.

She tries a different sonification, this time connecting storm type with voices and wind speed with volume. She presses play. Fifteen different voices start singing all at once at different volumes. Anne finds this a little disorienting, so she associates date with time as before. This time the different voices come in slowly at different instances in the sonification, increasing and decreasing in volume as it plays.

Anne sees several options in the tool. She chooses the selection tool that allows her to loop through a particular section in time. She selects a week in August and plays through the file, hearing only one of the voices as it decreases in volume.

Tools:

- metronome – to give people a sense of scale
- selection – to choose a specific section and let people loop through it while listening to different aspects of the sonification.