Script workshop

A warm welcome to all, participants as well as presenters some who are attending from far away! Thank you all for your interest in sonification.

Overview

* To manage your expectations: as sonification can only be experienced through listening, that’s what we’ll do a lot of, during the first part of this morning. Wearing headphones is optional, but will probably enhance the experience.
* Please bear with us, as every presenter has tried to give a fun and very short presentation to keep you engaged and inspire you. We hope to walk you through a treasure trove of sonification examples, leading you to new insights and ideas and stimulating discussion, for which there is ample time.
* Please keep your questions and suggestions and ideas until after the feature presentations.
* Now I will first take you on a bit of a journey through sonification land, to give you background as well as a first flash of inspiration for how sonification might be applied in your personal or professional environment.

**What do a tennis ball, the Sun, a glass of beer, crude oil and climate change have in common? You’ll know the answer by the end of this workshop!**7. Sonified alerts

Geiger Counter 1908 radiation click rate

Home appliances, microwave, washing machine.

**Low end**. Mobility apps, Vision Australia has a QR reader that uses sonification to indicate when you come close to the QR code for scanning

8. Science

High end

Health: brain activity.

**These were examples of sounds and sound effects and a little tune, but the use of musical instruments to communicate data categories and characteristics adds a new dimension to sonification.**

**Let’s listen to some examples.**

10. Sonification of Climate change

This is Sonification of the place and the time of global warming (from 1880 to ‘present’ = 2014) through a musical composition for string quartet.

Each instrument represents a specific part of the Northern Hemisphere.

This is a short fragment. In the full video you can hear the effect even better.

11. Publishing

Listen to Wikipedia

For the 2017 ICAD conference, there were plans to undertake a Do-a-thon activity to add sonifications to relevant Wikipedia entries, but this didn’t happen.

But ‘Listen to Wikipedia’ did happen. It is a real-time sonification of Wikipedia edits. It uses instruments to give you an impression of the dynamics involved with Wikipedia entries. A bell indicates an addition and string plucks represent subtractions. The larger the edit, the deeper the note. And a string swell means a new user just joined Wikipedia.

Only gives general impression. But sometimes it gets really busy!

* InfoSonics, sonification of Infographics: Adding speech to sonification to give more specific characteristics of data. Leona Holloway and Monash team, recent publication.
* The team from Monash University intends to submit a proposal for an ARC Linkage research project around sonification.
There is still the unique opportunity for industry partners to become involved.

12. Online Publishing

Next, I’d like to mention two examples of Online scientific journals that have integrated sonifications directly into a scientific paper alongside the more traditional figures and tables (‘inline’ with the text).

The first is an article on Sonification in Biophysics, by Scaletti et al. This was published in the February 2022 issue of the Journal of Chemical Education.

I’m a co-author of the second one, a Perspective article on sonification in astronomy, which has been accepted for publication in Nature Astronomy!

13. And my last example, the world’s only Sonification podcast: Loud Numbers.

* Duncan Geere and Miriam Quick use data sonification in their podcasts, addressing topics such as climate change, inequality, and more.
* Produced Six podcasts between June and August 2021.
* June 2021 episode: Tasting Notes: Beer-tasting with professional ‘cicerone’ Malin Derwinger. Like wine expert, but then for beer.

Their main motive was to use sonification to bring their data storytelling to life. Music and sounds can convey emotions. Another feature of sonification. I will play a short fragment for you to enjoy.

15. Listening to data – for access

I hope that these few examples have further fueled your interest.

Regarding sonification for access:

* Dynamic process, Quick overview
* Additional or ONLY mode of access– neuro diverse
* Accessibility for people with print disabilities

 **Now, Let’s hear it from our expert feature presenters about their projects that focus on sonification for the purpose of accessibility.
Please hold on a bit longer to any questions you may have at this point, as these talks may give you the answers, or… even more ideas. After the last short talk, the presenters will make themselves available for questions and discussions.**

Feature presentation #1

**Full bios Contact details and links to resources can be found in the documents Marjorie kindly shared with you previously**

Cagatay (Chatai) Goncu is a Data Engineer at Tennis Australia Game Insight Group and an adjunct research fellow at Monash University. His interests are in human computer interaction, sport analytics and machine learning.

#2

Dr Chris Harrison is an astronomer based at Newcastle University in the United Kingdom. He is the director of 'Audio Universe' which is a project exploring how to use sonification for astronomy research and education. The goals are to use sound to enhance scientific discovery and to make astronomy more accessible.

**Show is fantastic, I listened to it at home, and must be fantastic in a planetarium. Now we get a glimpse behind the scenes, The Making of…**

**Thank you Chris!**

#3

Jenn Kotler is the user experience designer at the Mikulski Archive for Space Telescopes (MAST) working to make space telescope data more accessible so people can do amazing science. MAST hosts data from over a dozen missions like from Webb, Hubble telescopes.

**Thank you Jenn! This project clearly shows how sonification is at the crossroads of technology, science, art and music.**

# 4

Matt Russo is an astrophysicist, musician, and sonification specialist. He frequently produces data sonifications for NASA with his project SYSTEM Sounds.

Link to PixelSynth, online sonification tool:

<https://matt-russo.github.io/pixelsynth-sw/>

**Thank you Matt! Matt has worked hard on making this tool accessible. You should check out Matt’s sonification of the Chandra X-Ray telescope images**

#5

**Phia Damsma**, Creative Director of Sonokids Australia. Member of the Sonification World Chat (SWC) and Lead of the SWC Working Group ‘Learn’.

Title: Never too early to learn sonification

Hopefully by now you will start to feel, like us, that sonification carries great promise for access to information in a variety of ways and in a variety of fields.
I’d first like to explain the SWC, which was mentioned a few times. This is a global group of multidisciplinary professionals who all work on sonification projects and all work on accessibility. Chris, Jenn, and Matt are members of the SWC. I’m the Lead of the working group Learn, aiming to ‘sneak’ sonification into the classroom. I hope you can now appreciate that we try to do this by developing lesson plans for the Science as well as the Arts curriculum. We will also make use of the PixelSynth tool which Matt presented.

Yesterday I had the opportunity to present ‘CosmoBally on Sonoplanet’. This free educational game app provides an opportunity to explore and experience sonification. Through the user survey on sonoplanet.com, which I hope all of you will also complete- even if you only have done a tiny bit of the app - we can learn more about how sonification skills can benefit access to learning. This may then further support efforts to advocate for Early learning of sonification.

I thought it was relevant to include this topic in today’s workshop, even if for only a minute. Because I ask you: would it be too presumptuous to hope that ‘attentive listening’ skills, listening to data, may one day be included in the mainstream early childhood education curriculum? Wouldn’t children then pave the way for sonification of information to become as ubiquitous as visualisation? And how would that impact on the landscape of access to information?

Now, let’s quickly proceed with our next feature presenter.

# 6

Charlie Roberts, Victorian Visiting Teacher Service, Secondary Mathematics Teacher, promoting accessible mathematics through EduVis and administrator of 'Educators supporting students with V.I. in Maths' Facebook group.

Desmos accessibility and great short demo of ‘audio tracing’:<https://www.desmos.com/accessibility>

**Thank you, Charlie!**

# 7 **Last but not least!**

Bill Jolley is a mathematician whose interests include new horizons for assistive technology and emerging applications of artificial intelligence. He is Deputy Chair of Vision Australia and a member of the Aged Care Council of Elders which provides community-based advice to the Commonwealth Minister for Health and Aged Care.

**Thank you, Bill!
I have certainly learnt a thing or two about Stocks from Bill in the last few weeks.**

**Q&A**

**What do a tennis ball, the Sun, a glass of beer, crude oil and climate change have in common?
Sonification.**We explored and highlighted the opportunities of Sonification for adoption as an additional or alternative format for access to information.
Now the floor is yours.

How can sonification improve access to information for you, your clients, students, or business?

What may its future hold?

Feel free to put questions in the chat!! Or put hand up. Please indicate to whom you direct your question. Try to keep questions and answers short, so that everyone can get a chance.

**Big THANKYOU to presenters!! and participants**