



Laslovarga, "Webster Falls in Winter, Waterdown, Hamilton, Ontario, Canada - Spencer Gorge / Webster's Falls Conservation Area," 23 January 2011, Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Waterdown_Webster_Falls_in_Winter8.jpg

February 9, 2024 | 1:00-3:00pm
Virtual Workshop

Sonification: Sounding and Listening as Critical Practice

u.mcmaster.ca/scds-events

DMDS

SCDS

Library

McMaster
University 

Code of Conduct

The Sherman Centre and the McMaster University Library are committed to fostering a supportive and inclusive environment for its presenters and participants.

As a participant in this session, you agree to support and help cultivate an experience that is collaborative, respectful, and inclusive, as well as free of harassment, discrimination, and oppression. We reserve the right to remove participants who exhibit harassing, malicious, or persistently disruptive behaviour.

Please refer to our code of conduct webpage for more information:
scds.ca/events/code-of-conduct/

Session Recording and Privacy

This session is being recorded with the intention of being shared publicly via the web for future audiences. In respect of your privacy, participant lists will not be shared outside of this session, nor will question or chat transcripts.

Questions asked via the chat box will be read by the facilitator without identifying you. Note that you may be identifiable when asking a question during the session in an audio or visual format.

Certificate Program

The Sherman Centre offers a Certificate of Attendance that rewards synchronous participation at 7 workshops. We also offer concentrations in Data Analysis and Visualization, Digital Scholarship, and Research Data Management. Learn more about the Certificate Program: <https://scds.ca/certificate-program>

If you would like to be considered for a certificate, verify your participation in today's workshop by completing the form at: <https://u.mcmaster.ca/verification> At an unspecified point during the workshop, an organizer will enter the code and the link into the session chat window.



**Sonification
Workshop Pt. I**

Outline & Schedule

SEGMENT	TIME ALLOTTED	KEY TOPICS / ACTIVITIES
Theoretical Concepts	45 minutes	<ol style="list-style-type: none">1. Anatomy of Sounds2. Subjectivity of Sound3. Sound narratives and processing sound as storytelling
Activity 1: Virtual Soundwalk	20 minutes	<ol style="list-style-type: none">1. Record 2-3 distinct sound clips (15-10 seconds each)2. Share your sound files
Break	5 minutes	
Activity 2: Collaborative Listening	20	<ol style="list-style-type: none">1. How sound interpretation is subjective and shaped by cultural values and understandings of sound and is informed by personal experiences.2. Share your interpretations.

Data Models

- Visualization:
 - height, area, colour or shade, position
 - ex. bar graph, pie chart, map
- Physicalization:
 - size, weight, texture, smell, temperature
 - ex. data sculpture, crafted objects

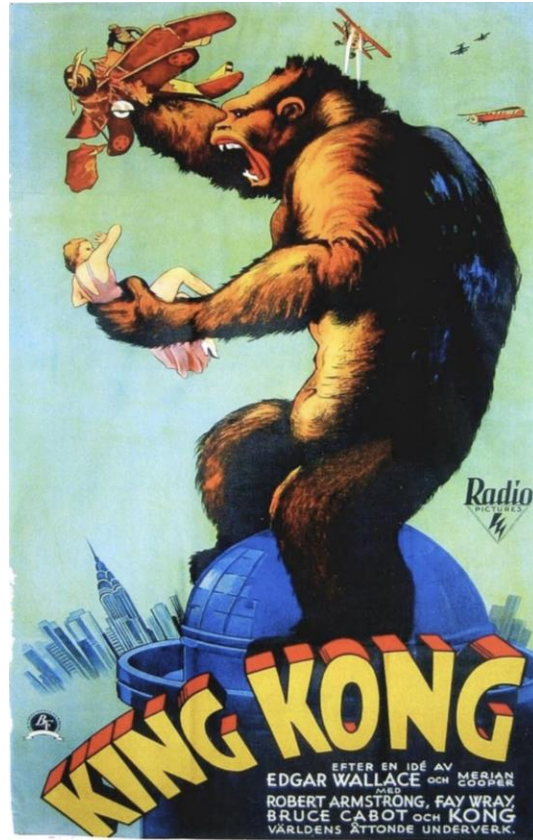
Sonification:

communicating data through
sound

How do we use sound
to communicate
information?







Sonification x Critical Data Studies

- The goal of embracing sound data is not just to replace the visual cues with sonic information.
- What else does sonification bring in terms of methodology and the way we experience data?

What is unique
about the way we
experience sound
(in comparison to
images)?



Sound vs. Image

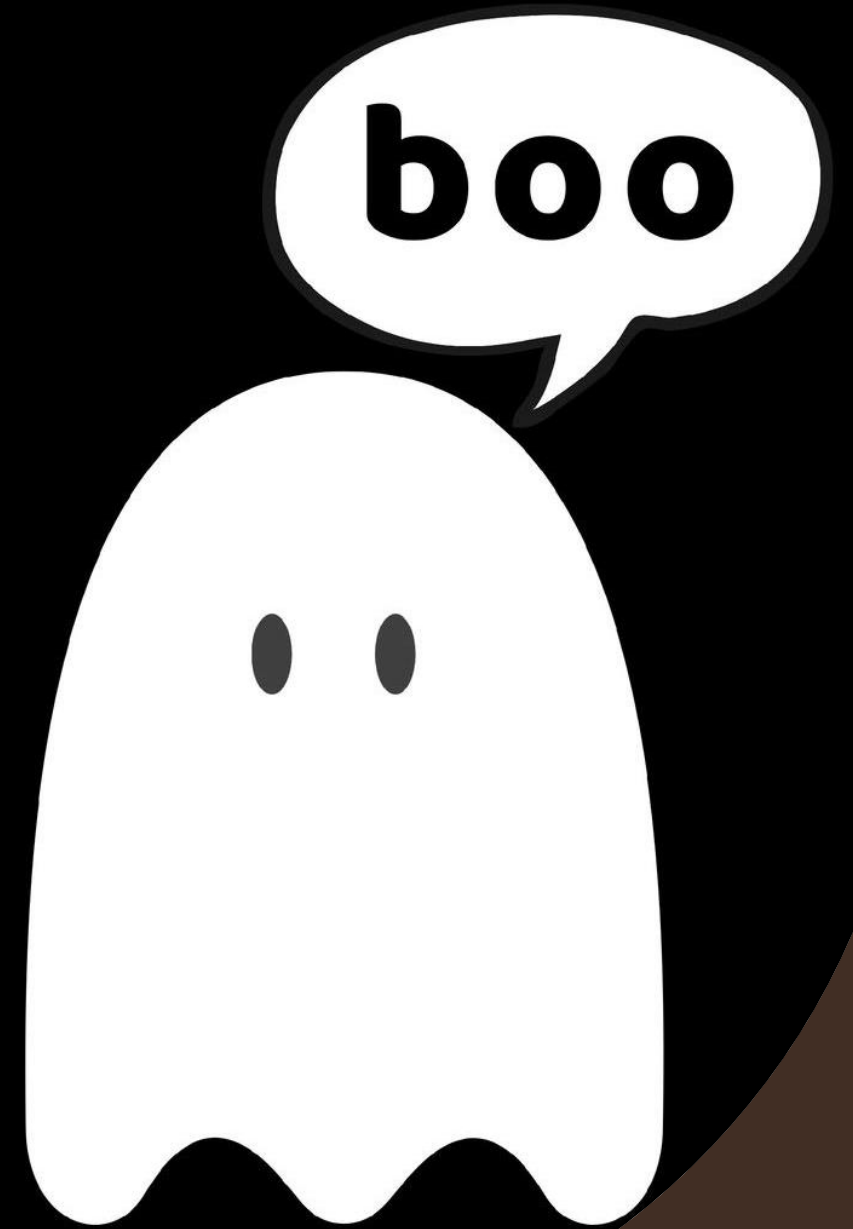
- Temporal
- Immersive (omniphonic)
- Projected (i.e. voice)
- Can't "turn" off
- Integrates with other senses

Objective vs.

Subjective:

Is what we hear
what we get?

Phantom Sounds



TikTok

100 likes

What do you hear?

Bart Simpson Bouncing

Rotating Pirate Ship

That Isn't My Recipe

Lobsters In Motion

That Is Embarrassing

Lactates In Pharmacy

I'm Chasing Martian

Baptism Piracy

That Isn't Mercy



Onomatopoeia: Around the World

Crying Baby:

English: 'Wah-Wah'

French: 'OUIN OUIN'

Spanish: 'BUA BUA'

Korean: 'EUNG'AE-EUNG'AE'



Onomatopoeia: Around the World

Leaky tap:

English: 'DRIP DROP'

French: 'PLIC PLOC'

German: 'PLITSCH PLATSCH'

Dog Barking:

English: 'WOOF WOOF'

Russian: 'GAV GAV'

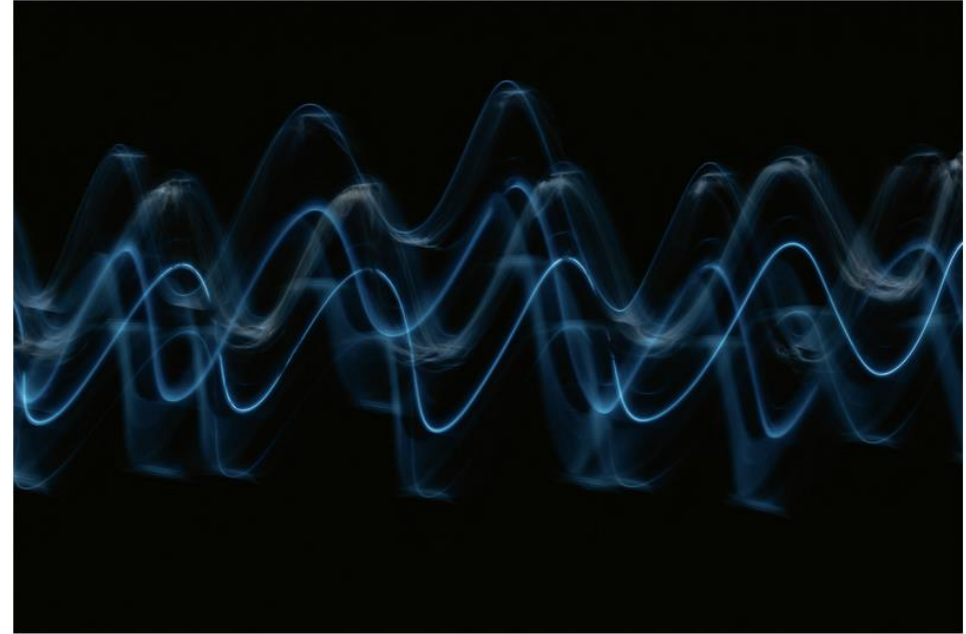
French: 'OUAF OUAF'

Why experiment with
sonification?



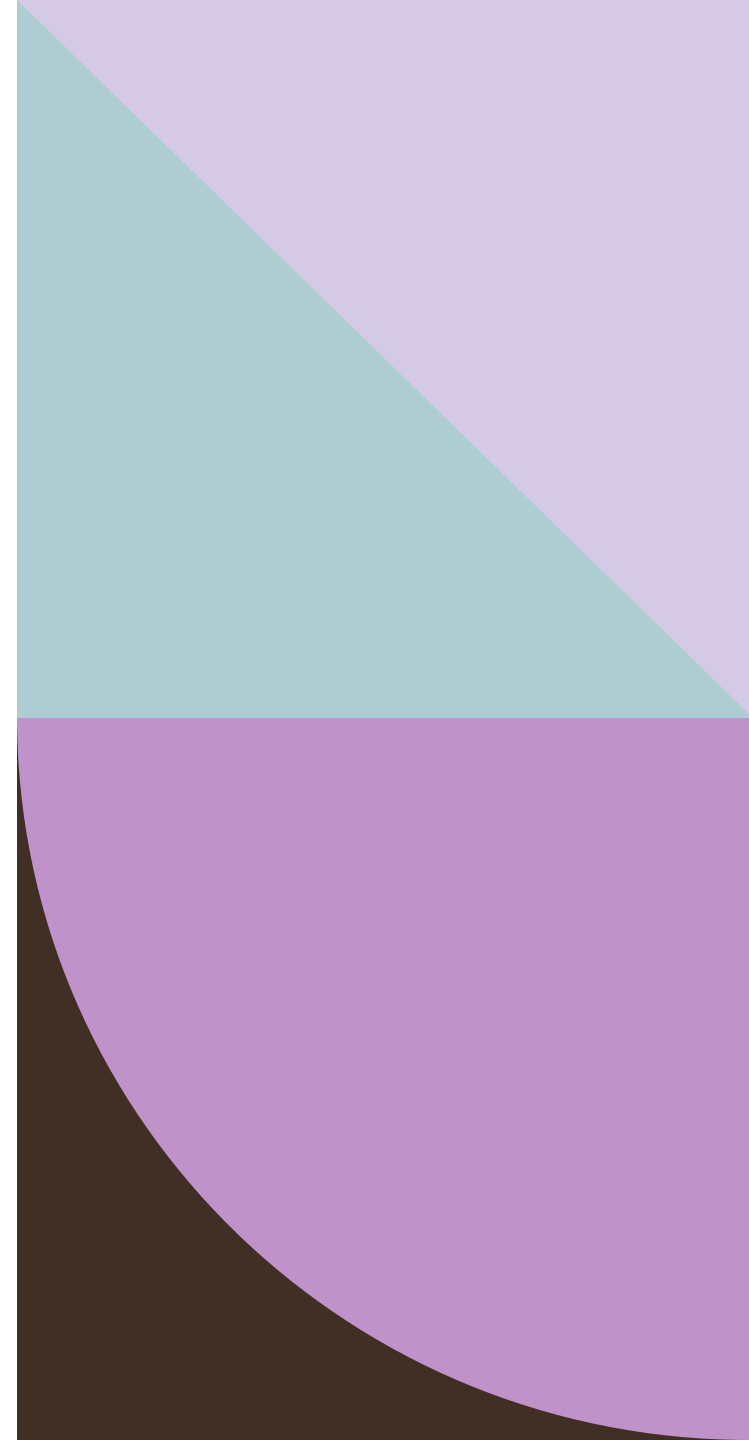
Why Sonify?

- 1) Accessibility
- 2) Simultaneous Activity
- 3) Cocktail Party Effect
- 4) Materializing Data
- 5) Overlapping Sensory Experiences
- 6) Affect
- 7) Enjoyment and Play



Types of Sonification

1. Icons/cues
2. Audification
3. Mapping



Icons/cues:

brief, non-verbal signals, represent specific information

ex. car horn, phone notification, whistle

Audification:

time-stretching and pitch-shifting
to bring naturally-occurring sounds
into human range

ex. sounds of sun

Invisible Sonic Worlds

Humans: 20 and 20,000 hz

Elephants: low as 14 hz

Cats: up to 64,000 hz frequencies

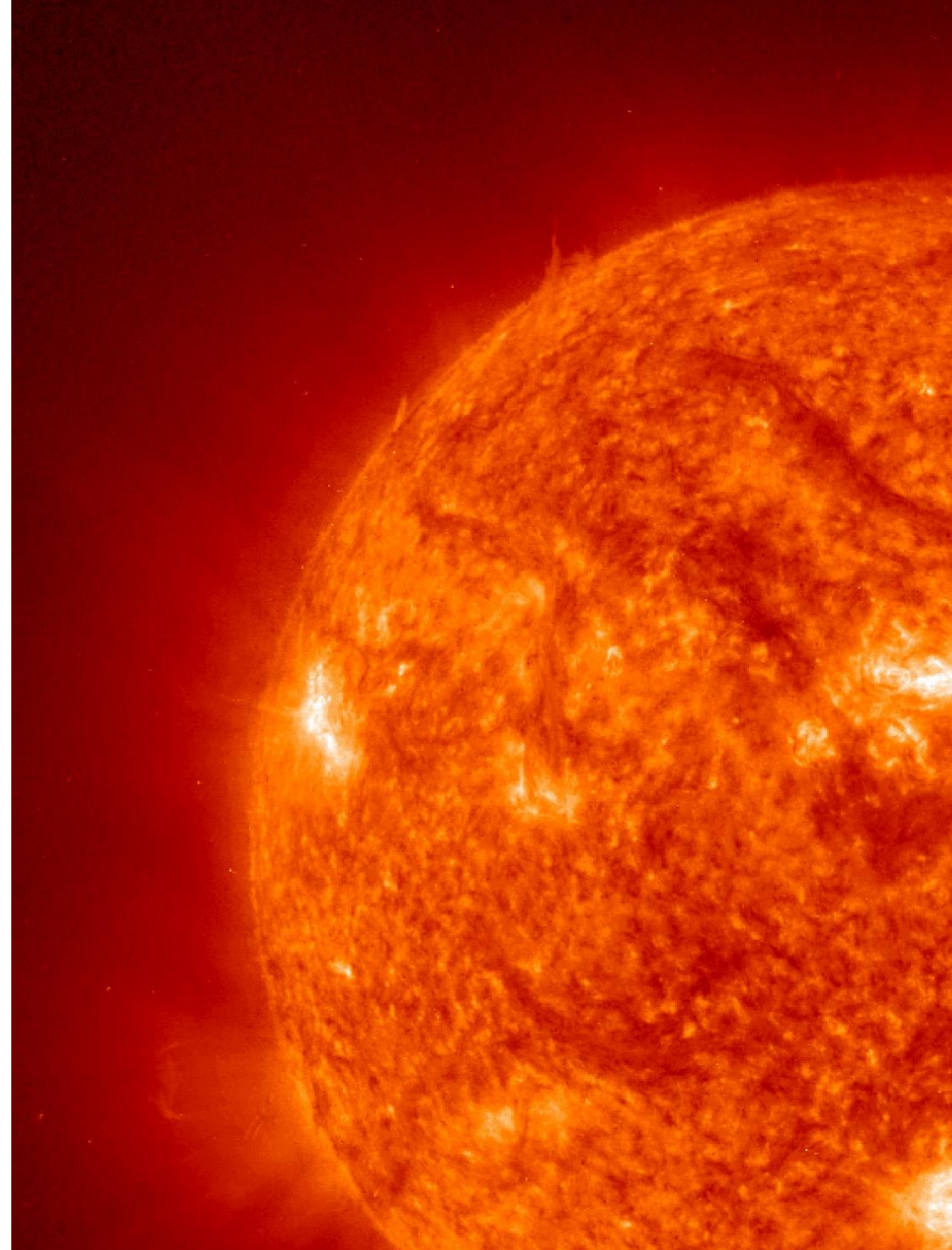
Bats: up to 200,000 hz

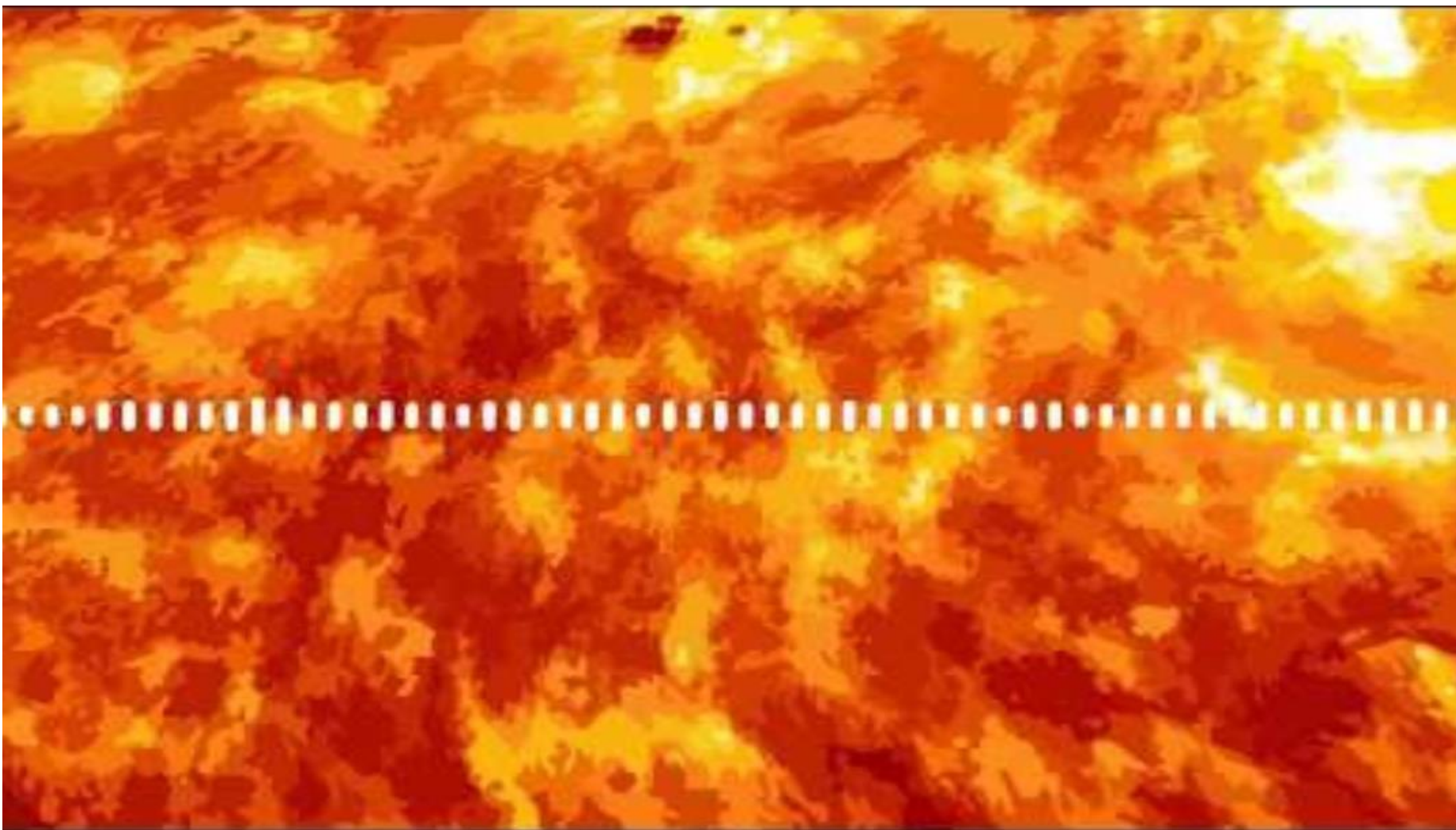


Invisible Sonic Worlds

Earthquakes: 0.01 to 10 Hz

Sun: 0.0033 Hertz (Hz) – 6,000
times below the lowest tone
audible to a human ear





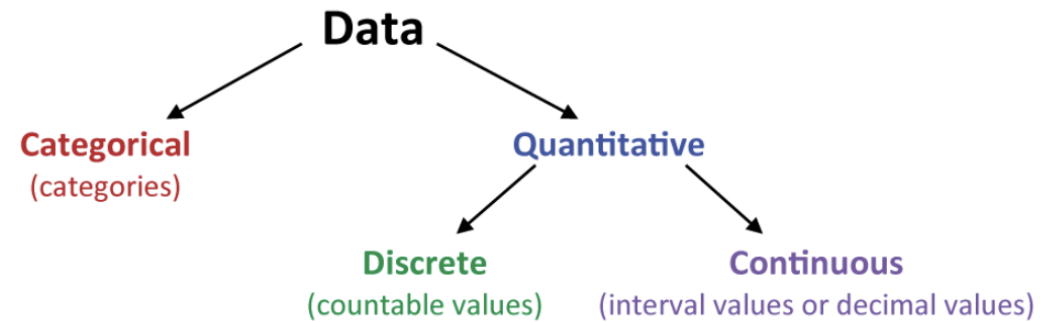


**The
Guardian**

What if Drake was
born a piano?

<https://vimeo.com/149079243>

Thinking About Sound Variables



Sound Variables

- Loudness
- Pitch
- Timbre
- Duration

Choosing your scale...

How do you translate one variable (DNA code) to another (notes)?

Adenine (A) → D
Thymine (T) → F
Guanine (G) → C
Cytosine (C) → G



Choosing your scale...

How do you translate one variable (DNA code) to another (notes)?

students should **make sure the audio file of their recording is ready to import into Audacity**. The file should be in **mp3 or wav** format.



Gene Expression

Protein Synthesis to make a string of amino acids

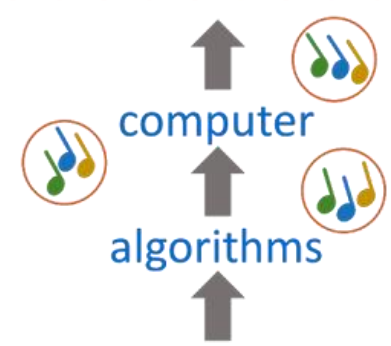
M C S V C H A V Y A



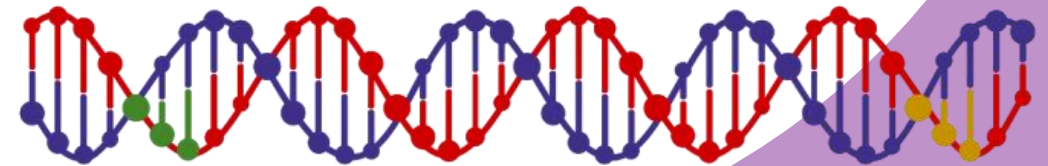
Gene Sonification

Audio Synthesis to make a string of audio notes

c d# f e d# g f# e c g



The rules of the genetic code are used by biological cells of your body to make proteins. Similar rules are used during sonification to make an auditory display (string of notes). In both cases the DNA sequence is read in groups of three bases (codons)



GCTT**ATG**TGCAGTGTATGCCATGCAGTGTATGCC**TGACG**
Start codon (ATG) Stop codon (TGA)

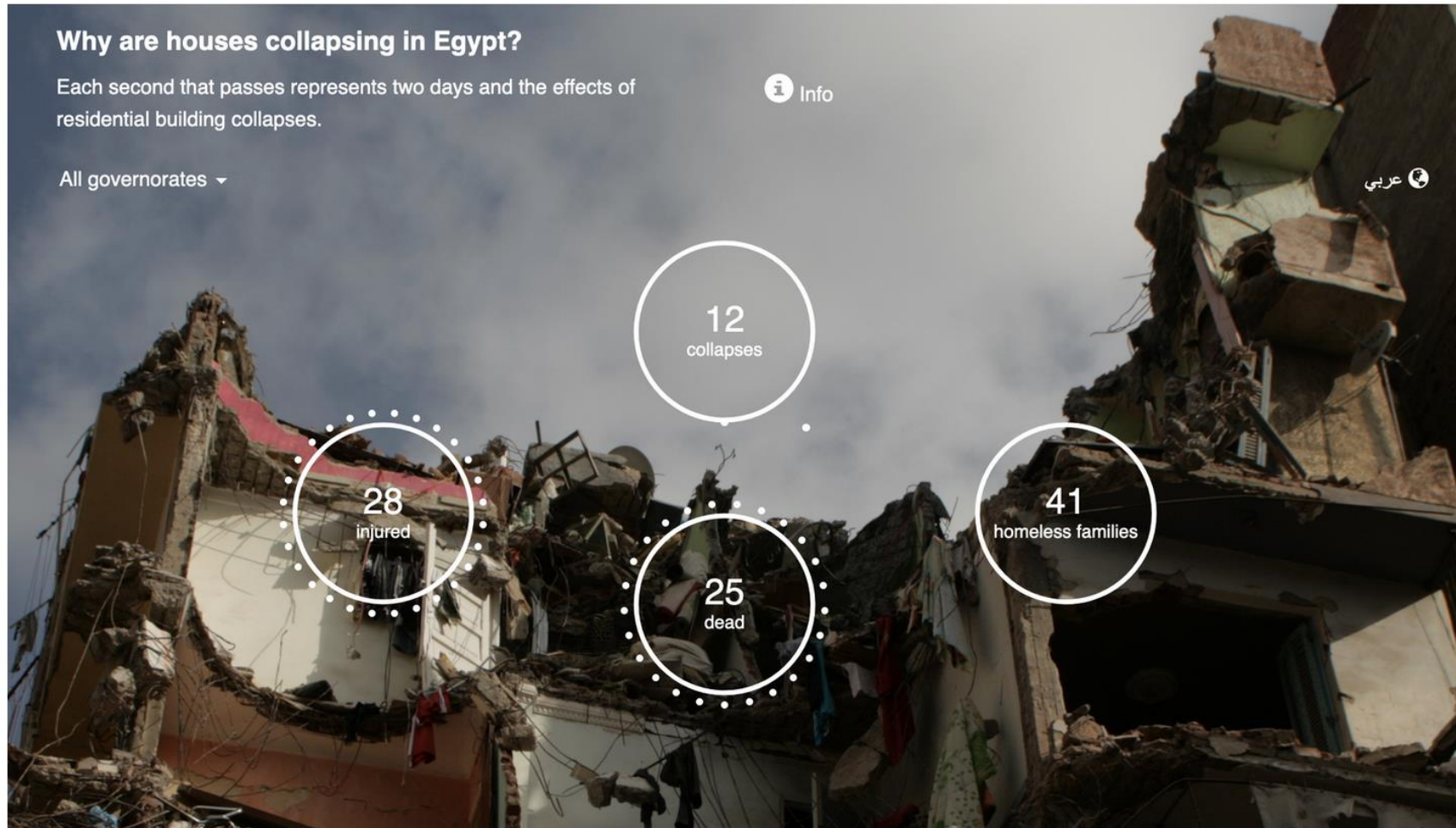
Why are houses collapsing in Egypt?

Each second that passes represents two days and the effects of residential building collapses.

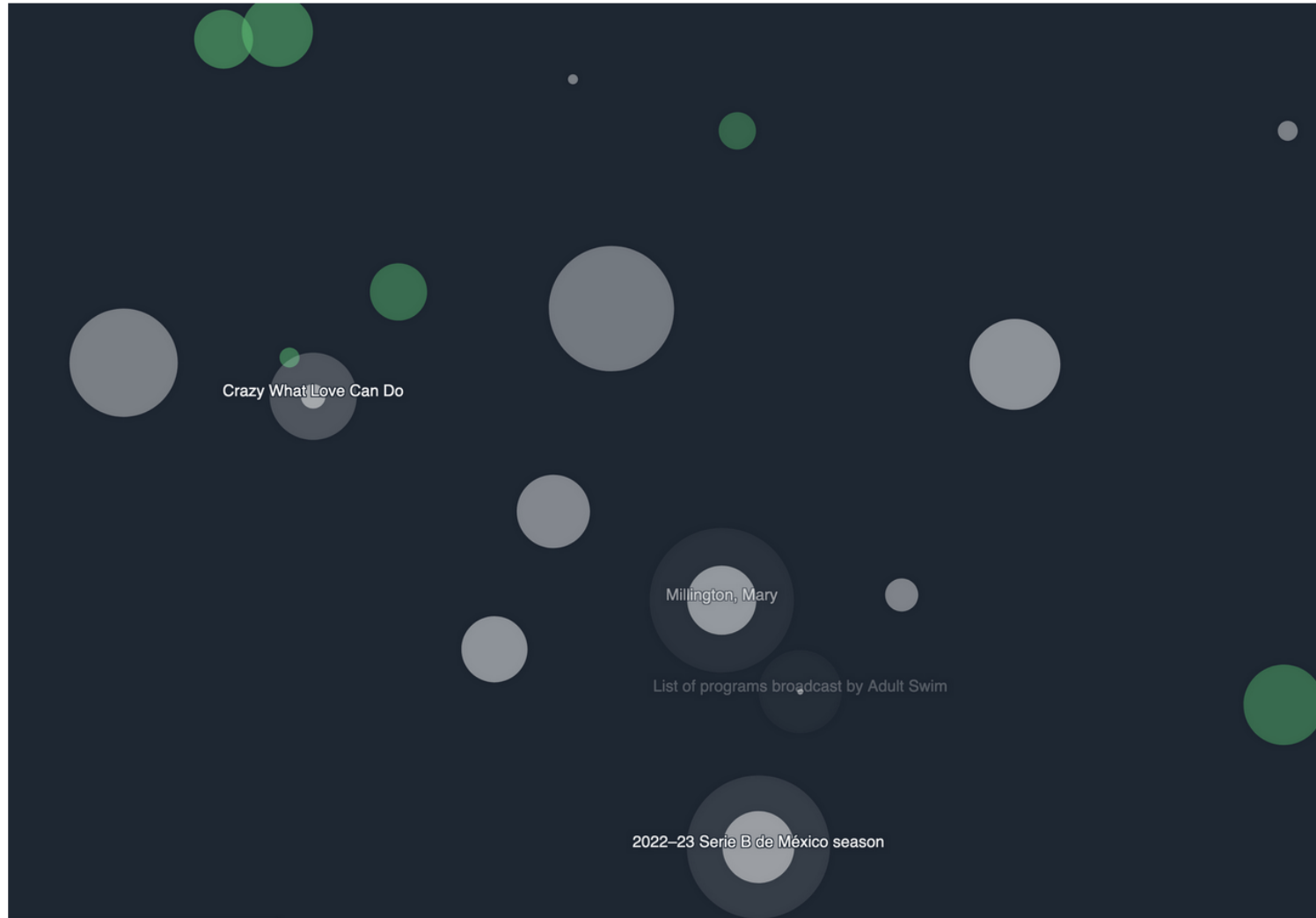
 Info

All governorates ▾

 عربي



<https://egyptbuildingcollapses.org/>



<http://listen.hatnote.com/>

Virtual Soundwalk Activity

What is soundwalking?

- Origins: World Soundscape Project (Vancouver, 1970s)
- "[A]ny excursion whose main purpose is listening to the environment." - Hildegard Westerkamp
- A creative and research practice that involves listening and sometimes recording while moving through space.
- A redirection of visual primacy to engage different senses to 'listen' to our immediate environment.
- Soundwalks can be done anywhere, anytime, individually or in a group.

Virtual Soundwalk Activity

AIMS

- To observe (y)our immediate environments through listening and sound recording.
- The sound data created today will be carried over to the second workshop when we create a sound map using StoryMaps and experiment with the data sonification application TwoTone.

Virtual Soundwalk Activity (10 minutes)

INSTRUCTIONS

1. Using your mobile phone (or a recording device of your choosing), record **a minimum of two** distinct **10-15 second sound clips**.
2. You can respond to the **prompts** below or record a different type of sound of your choice
 - What are the textures, rhythms and variations in the sounds around you?
 - What is a familiar sound?
 - What is an unfamiliar or strange sound?
 - What thoughts and/or feelings are induced by the sound?
3. Save the sounds as **mp3 or wav sound file**. Use the following file naming convention: today's date + sound source (e.g. 2024-02-09-radiator).

Sound Data File Collection - February 9, 2024.

Submit your sound data file!

andzeff@gmail.com [Switch account](#)



The name and photo associated with your Google account will be recorded when you upload files and submit this form. Your email is not part of your response.

* Indicates required question

Using your mobile phone (or a recording device of your choosing), record two distinct 10-15 second sound clips. **Upload the mp3 or wav sound file.** **Please use the following file naming convention: today's date + sound source. For example, 2024-02-09-radiator** *

Add file

Latitude: Please go to Google maps. Place your cursor somewhere proximate to your current location. Right-click and you will receive the **latitudinal (first number)** and longitudinal (second number) data. For example **43.262213, -79.91836** *

Your answer

Longitude: Please go to Google maps. Place your cursor somewhere proximate to your current location. Right-click and you will receive the latitudinal (first number) and **longitudinal (second number)** data. For example, 43.262213, **-79.91836** *

Your answer

Please add **three keywords** separated by commas that describe the sound.

Your answer

In a few sentences, explain 1) what drew you to this sound, and 2) what interests you about it.

Your answer

Submit

Clear form

<https://forms.gle/H3jAQdaNCQj8mg7K8>

BREAK (5 minutes)

Collaborative Listening Activity (20 minutes)

AIMS

- To explore further how sound interpretation is shaped by cultural values and assumptions and informed by personal experiences.
- The sound data created today will be carried over to the second workshop, when we create a sound map and experiment with the data sonification application TwoTone.

Group Listening Exercise - February 9, 2024

andzeff@gmail.com [Switch account](#)



Not shared

* Indicates required question

SOUND FILE 1: How do you respond to sound 1 emotionally, more positively or negatively? *

1 = very negative

2 = negative

3 = neutral

4 = positive

5 = very positive

1

2

3

4

5

SOUND FILE 1: Explain why the sound was rated this way in a few sentences. *

Your answer

SOUND FILE 1: Identify 3 keywords separated by commas that describe the sound. *

Your answer

<https://forms.gle/H2Wgbmk6c7EfNefj9>