

March 15, 2024 | 1:00-3:00pm
Virtual Workshop

Sonification: Communicating Data with Sound

u.mcmaster.ca/scds-events

DMDS

SCDS

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"The Land, our oldest storyteller and philosopher, is embedded with diverse languages, texts, soliloquies, melodies, and songs that for the listener offers new insights and strategies on reflective listening that is critical for engaging in the work of sonic archiving and composition. By listening, reflecting, and responding to the Land we learn to engage in forms of aural weaving that are reminiscent of Indigenous Storywork (Archibald 2008) and ways of cultivating a deeper sense of kinship and relationality."

Spy Dénommé-Welch, Jean Becker, and Cecilia Garcia Vega from "Moving Toward Land-Based Sound Archiving and Composition" (2022)

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.

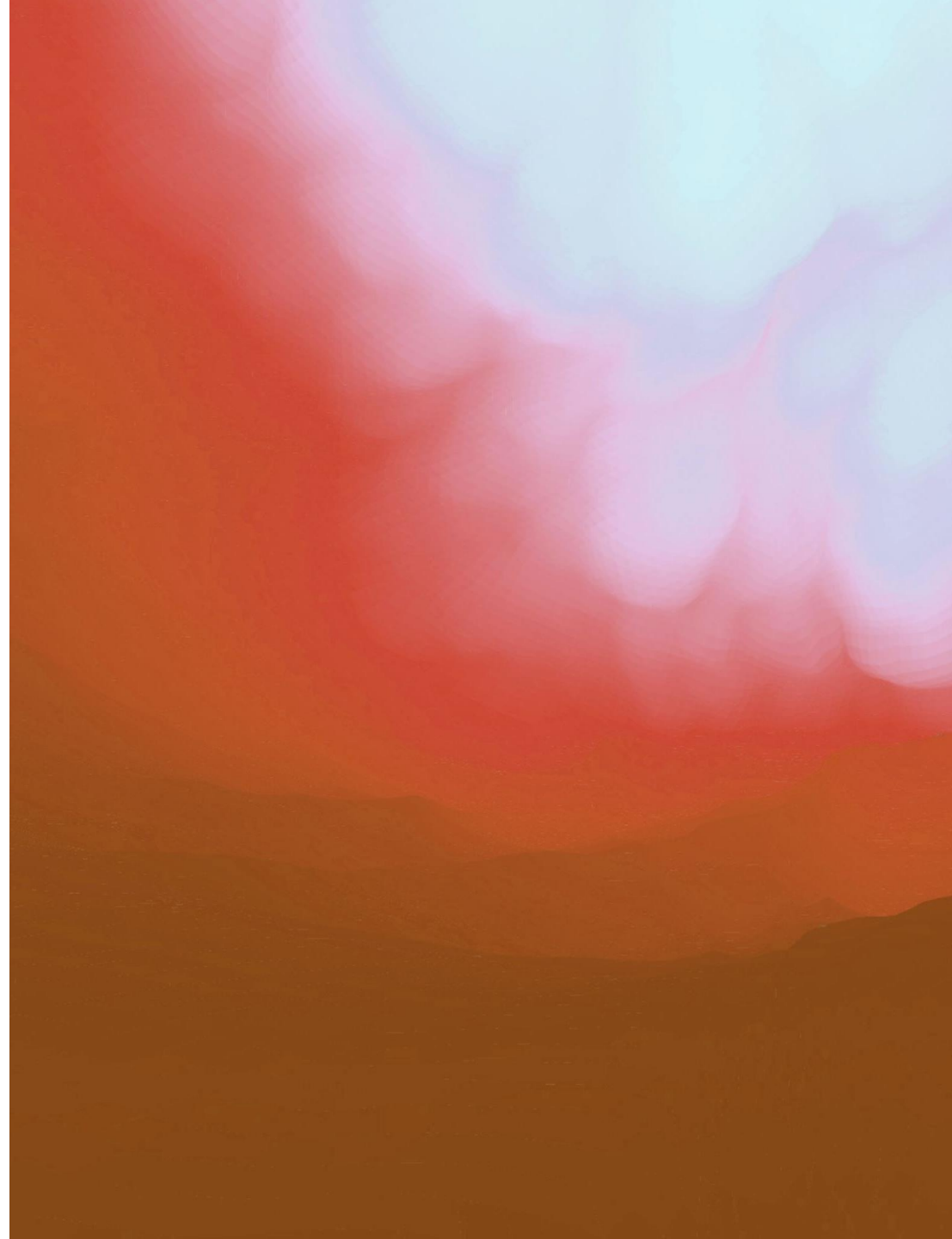
Outline & Schedule

SEGMENT	TIME ALLOTTED	KEY TOPICS / ACTIVITIES
PART 1: StoryMaps	60 minutes	<ul style="list-style-type: none">- Combining sound and visuals- Sound Doodles (Sketch.IO)- Introduction to StoryMap
BREAK	5 minutes	
PART 2: Introduction to TwoTone	45 minutes	<ul style="list-style-type: none">- Parameter Mapping- Critical Listening Practices- Using TwoTone- Discussion & Show & Shared

Workshop Materials

- StoryMaps account creation link: <https://storymaps.com/get-started>
- TwoTone: <https://www.sonify.io/twotone/>
- Link to the folder with materials: <https://u.mcmaster.ca/sonification>

Sonification
Workshop Pt.
II



Combining Sound and Visual Data

Sound and vision are often framed as competitors. In actual practices of sonification work, however, this relationship usually turns out to be less antagonistic: different sensory experiences form an inseparable whole.

Often the visual channel of communication can be overstimulated and bringing in sonification can engage non-experts as well nurture an interactive communication process with data.

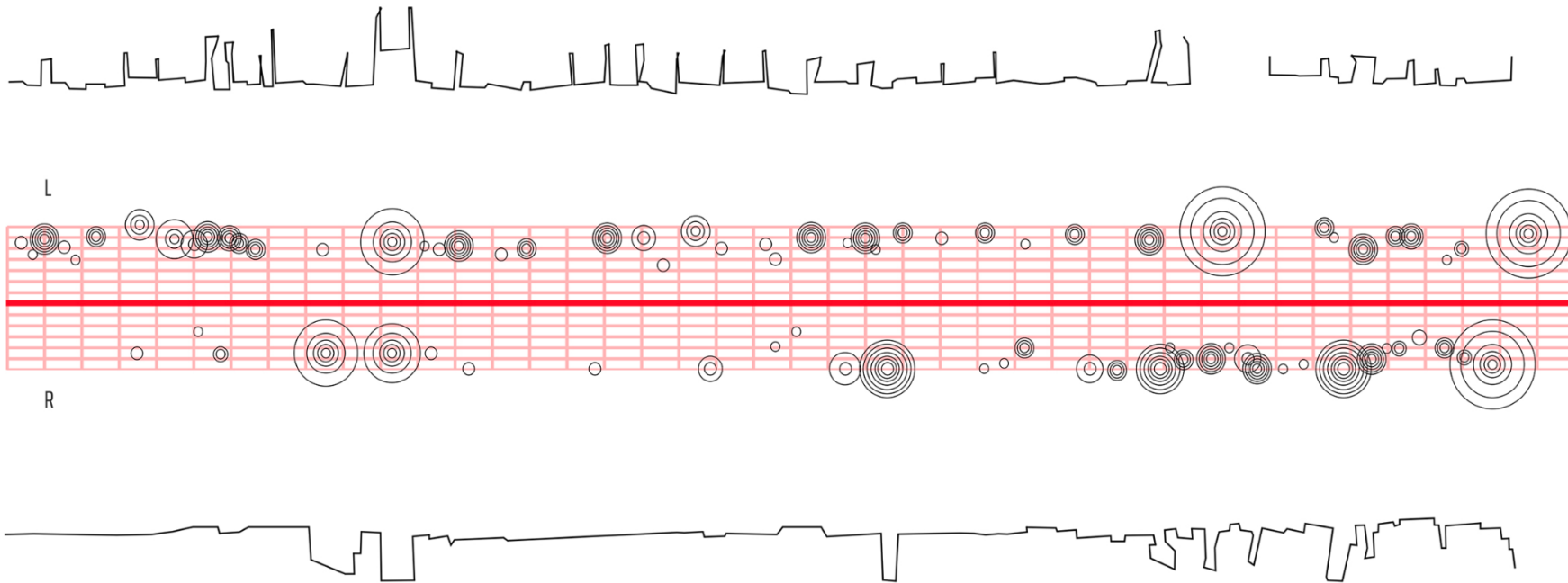
Visualizing Sound:

spectrographs, graphic scores,
...acoustic atlases!

Picnic



for violins, oboe, bass guitar



- Note drone
- ◎ Note vibrato rate
- ↓ Note intensity
- ↑



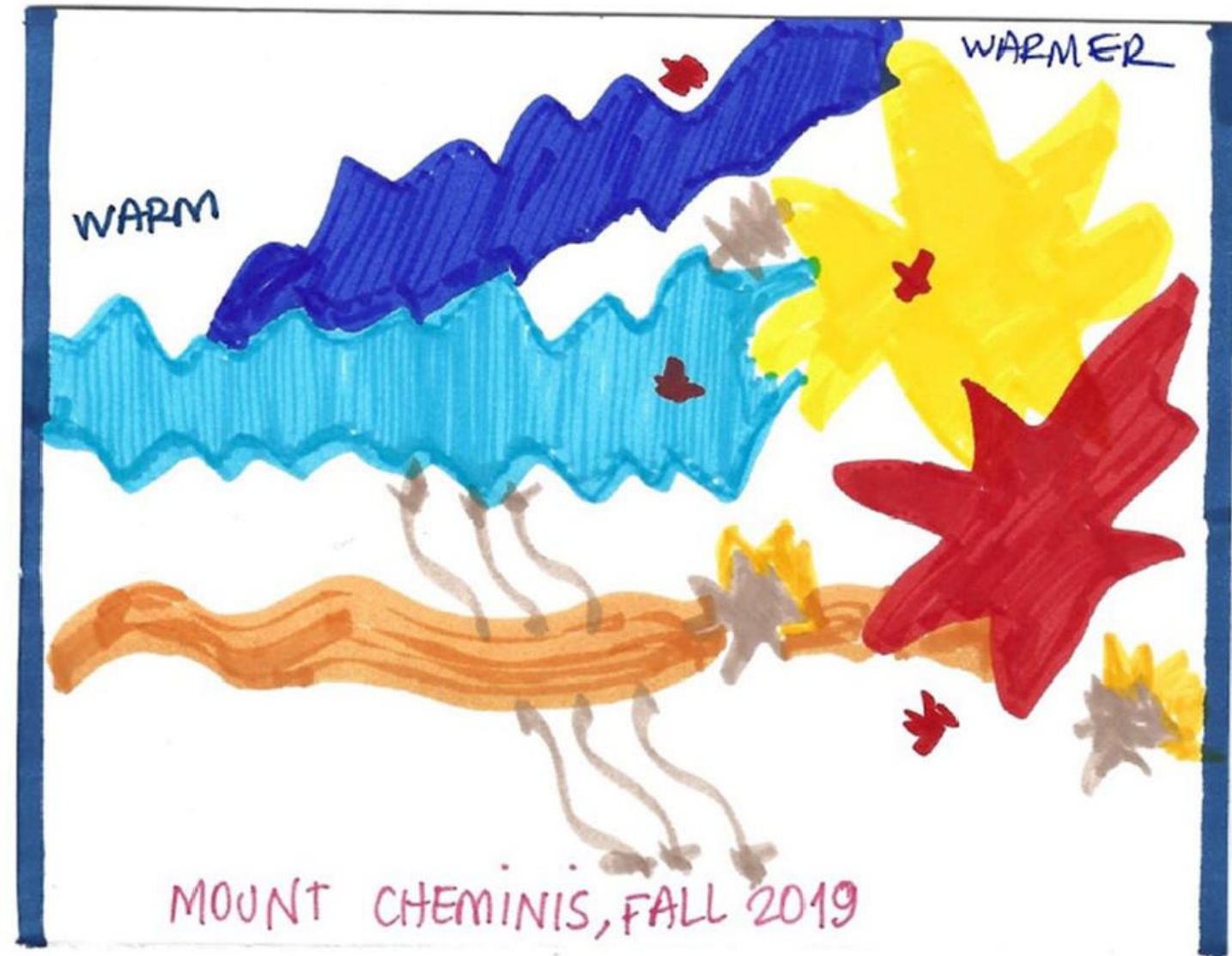
Highway Suite #1 (excerpt)

Spy Dénommé-Welch



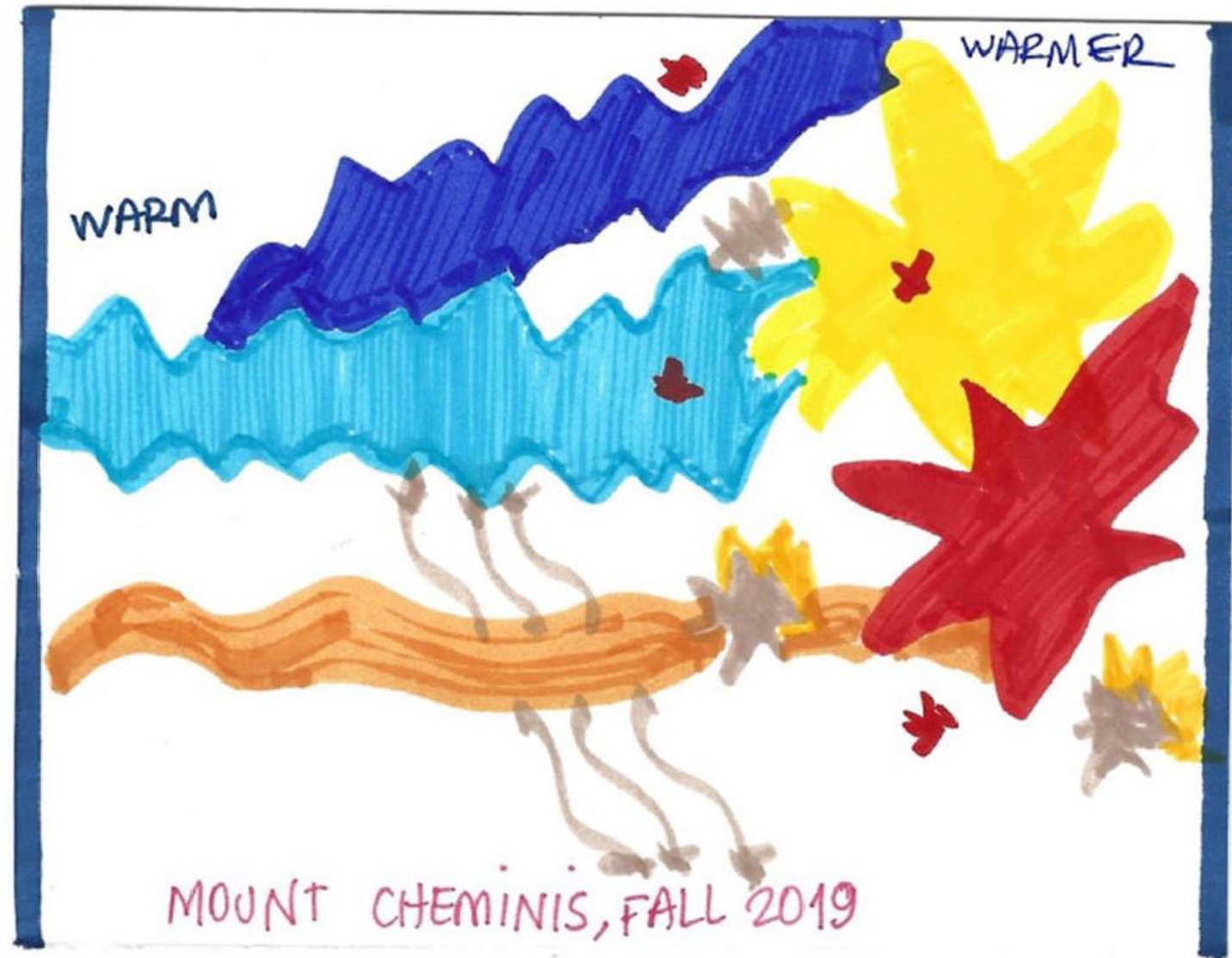
"What I can recall from the location, the trees, the sound of the wind, the vibration of the leaves and the serenity of the land is a feeling of warm temperature and sparkles of different colors...."

- Cecilia Garcia Vega



"... Like little fireworks in front of me. When the sound is steady and constant, the sparkles turn to light waves of color, like curved lines in the sky."

- Cecilia Garcia Vega



Sound Doodle Activity (5 minutes)

INSTRUCTIONS

1. Open Sketch Pad: <https://sketch.io/sketchpad/>. Take a moment to familiarize yourself with the different brush and colour options.
2. As a group, listen to "Bottlenecked" by Spy Dénommé-Welch and Catherine Magowan: https://www.youtube.com/watch?v=8_luMePvUB0.
3. Draw what you hear!

StoryMaps

- Cloud-based storytelling tool that allows you to combine maps, text, and interactive multimedia content
- Part of the ArcGIS suite of products, many of which are focused on mapping and Geographic Information Systems, but also include tools for easy app creation and digital storytelling

Examples – The Voices of the Grand Canyon

<https://arcg.is/SLT44>



The Voices of Grand Canyon



The Voices of Grand Canyon

Read, listen, watch, and learn.

by The Grand Canyon Trust



Jim Enote

Nikki Cooley

Leigh Kuwanwisiwma

Coleen Kaska

Loretta Jackson-Kelly

Examples – Sounds of the Wild West

<https://arcgis.com/arcgis/is/1fXqDi0>

 ACOUSTIC ATLAS Sounds of the Wild West



Sounds of the Wild West

An audio tour of Montana's four major ecosystems

Acoustic Atlas

March 8, 2022



Access and Accounts

Professionals

- **ArcGIS StoryMaps**
 - Company / organizational license
 - Free 21-day trial

Higher Education

- **ArcGIS StoryMaps**
 - Campus license
 - ArcGIS for Student Use
 - ArcGIS Public account (limited functionality)

Personal Use

- **ArcGIS StoryMaps**
 - ArcGIS for Personal Use
 - ArcGIS Public Account
- **StoryMaps.com**

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Teaching and research

Request: <https://mcmaster-ca.libwizard.com/f/arcgis>



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Workshop



Activity

- Create a StoryMap using the audio clips collected during part 1 of the workshop
- Workshop materials - <https://u.mcmaster.ca/sonification>
- StoryMaps: <https://storymaps.com/get-started>

Resources

- McMaster Library GIS Services
 - libgis@mcmaster.ca
 - [Software Request Form](#)
- ArcGIS StoryMaps
 - [Discover the possibilities with ArcGIS StoryMaps](#)
 - [Getting Started with ArcGIS StoryMaps](#)
 - [Nine steps to great storytelling](#)
 - [Planning and outlining your story: How to set yourself up for success](#)
- StoryMaps.com
 - [Meet StoryMaps](#)



Mapping:

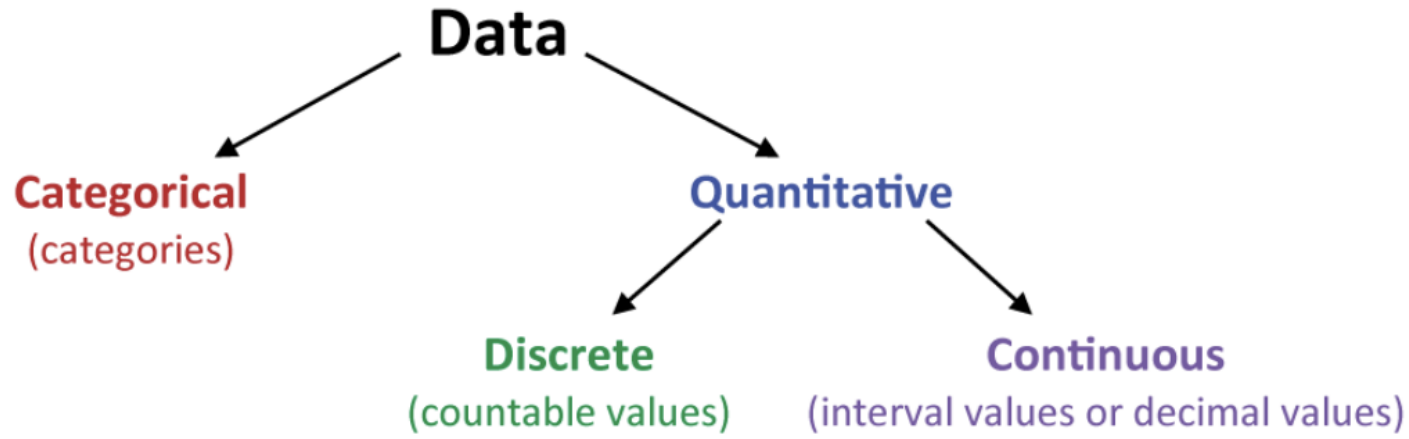
translating other types of information
into sound, using chosen scale

ex. DNA

How might we encode data
with sound?

Sonification as:

- Volume
- Pitch
- Tempo, beat
- Direction
- ... or a combination!



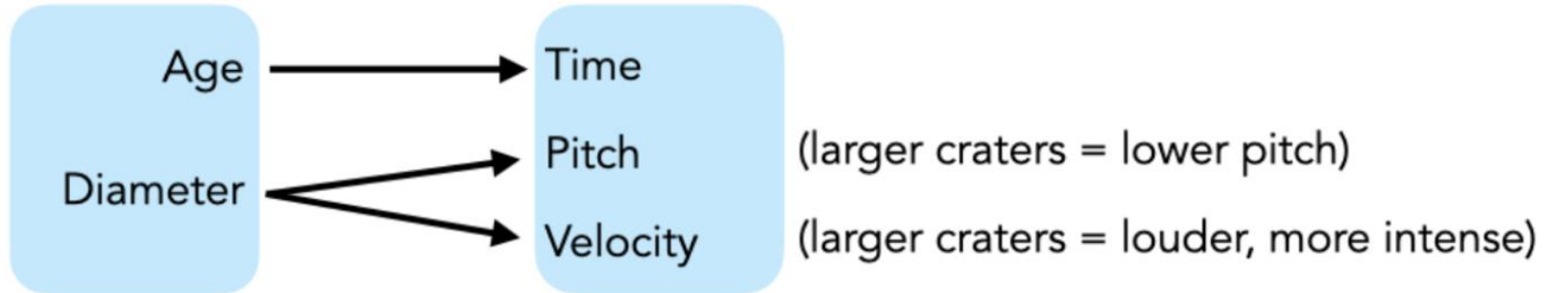
Sound Variables

- Loudness
- Pitch
- Timbre
- Duration




Data Parameters

Musical Parameters





Highcharts Sonification Studio

MIDI +  **python**

How does Sonification Change the Way You Listen?

As a Listener: Uneasy Listening

Sonification can often resist the compulsion toward a smooth and clean framing that are often the goal for visualizations. It allows us to tune into the messiness of stimuli or voices that may be overlooked in the visual channel.

Because of our brain's ability to focus and filter our auditory attention, we may be attuned to certain outliers or differences that are distinct from what we may notice in the visual realm. Those outliers can be quite visceral depending on how they are mapped.

Resisting an Ideal Listener

- Deaf and disability theory enlarges the narrow definition of sound and listening. Disability scholars have also worked to denaturalize hearing which has become central to sound studies.
- There is no "objective" way to hear a particular sound—Deafness for example is one variety of hearing (and even within that there are variations).
- Sound is multimodal and hearing continues to be altered and affected by medicine, nutrition, education, architecture, fashion, law etc.
- The ear itself is a composite organ—listening has always been a heterogeneous practice.

Mara Mills, Michele Friedner and Stefan Helmreich, *Keywords in Sound*