> AV SYSTEMS: COLOR + TONE

TODAY

- Mapping Intermedia #2
- Color-Tone Relationships
- Sound Synthesis Fundamentals + Activity: Build A Simple Synth
- Image-2-Sound + Activity: Make Your Sound Visible
- Transformation Project Show + Tell
- Quick One-On-Ones Check Ins With Each Group

IMCA 220 | Intro to Critical Intermedia Practices | Mondays | 13:30 PM to 17:30 PM

Hailey Guzik

2026-10-19

MAPPING INTERMEDIA

- *Group review of foundation readings*
- *Group activity*
- *Map of Intermedia - now on Moodle*

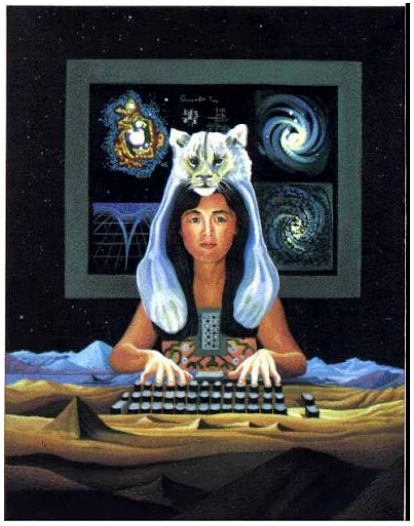
Foundation Readings

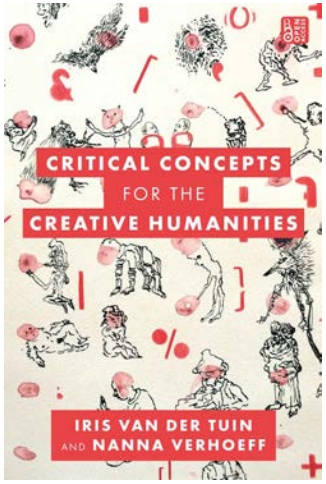
HARAWAY, "A CYBORG MANIFESTO" IN *SIMIANS, CYBORGS, AND WOMEN* (1991)

TUIN AND VERHOEFF, "TRANS-, TRANSING" IN *CRITICAL CONCEPTS FOR CREATIVE HUMANITIES* (2022)

reading summaries

- Author
- Keywords
- Main argument
- Supporting points
- Reflections / thoughts





Group Activity: Reading Summaries

SPLIT INTO YOUR READING GROUPS AND CREATE YOUR READING SUMMARIES.

+1 additional reading per group:

- **Group 1** - Coccia, "Transformations" in *Metamorphoses* (2021)
- **Group 2** - Morton, excerpts from *All Art is Ecological* (2018)
- **Group 3** - Russell, "Glitch Feminism and the Genesis of Glitch Body Politic" (Rhizome, 2013)
- **Group 4** - Cárdenas, "Algorithmic Analysis" in *Poetic Operations* (2022)

Reading Groups

Group 1	Group 2	Group 3	Group 4
Camélia	Brayden	Aren	Alicia
Zéa	Nicolas	Florence	Emmanuel
Joshua	Fiona	Ahmed	Imani
Otto	Leila	Justine	Callum
Mia-Alexandra	Eloise	Lindsymae	



THE MAP OF INTERMEDIA

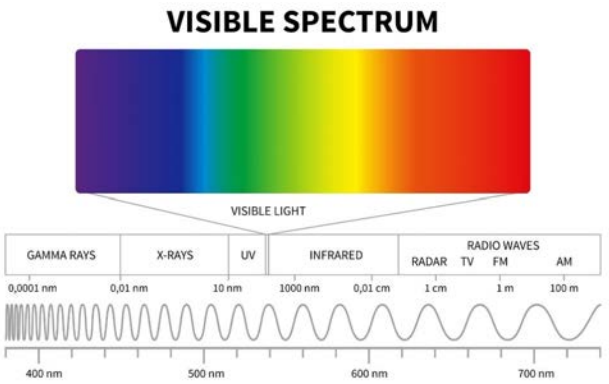
It's On Moodle Now!

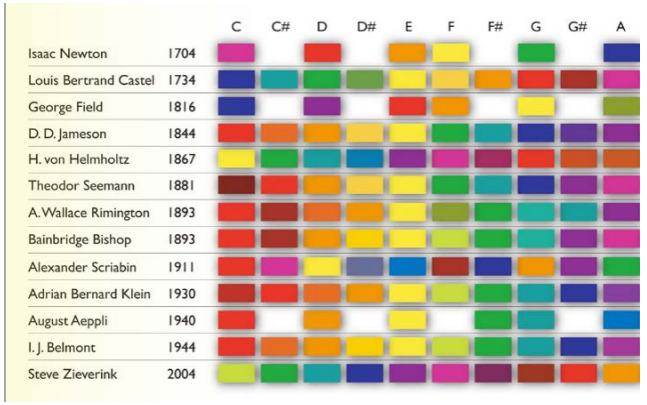
LET'S GO OVER HOW IT WORKS AND ADD OUR CONTRIBUTIONS FROM MAPPING #1

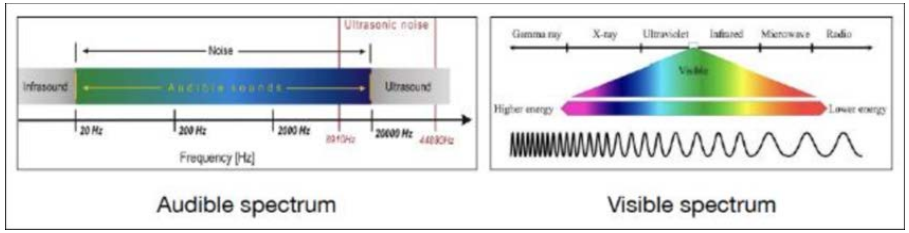
COLOR-TONE TRANSFORMATIONS

- *Brief background / history of color-tone relationships*
- *Reviewing audiovisual foundations*
- *Activity: Shared audiovisual experience*

Color + Tone Relationships Have A Long History







Electromagnetic spectrum via gamma-sci.com Subjective color-sound relationships by scientists/muscians/theorists via Sophia Leader

The Colour Organ

THE ASSOCIATION OF COLOUR SCALES TO MUSICAL SCALES



via wikimedia.org



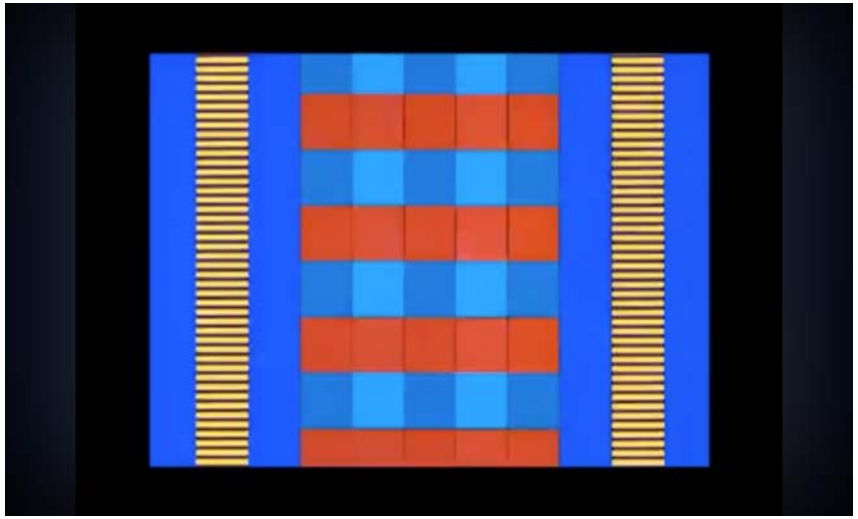
Marie Flanagan, Light Play, 2026 (Mutek)

Information via. www.see-this-sound.at

Visual Music..

THE ASSOCIATION OF MUSIC TO FORMAL PRINCIPLES OF ART (COLOUR, SHAPE, LINE, ETC.)

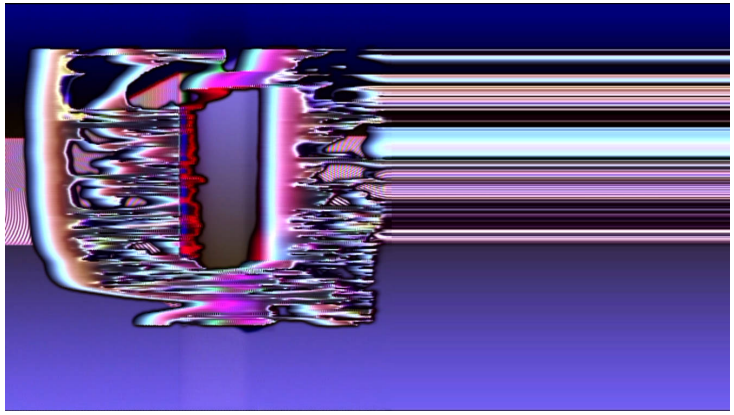




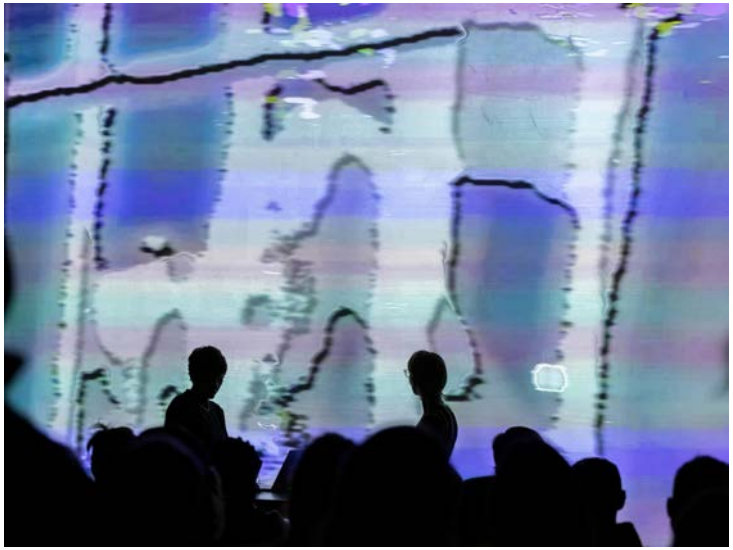
- Mary Ellen Bute, *Rhythm in Light* (1934)
- Norman McLaren, *Syncromy* (1971)

Synthesizers

SIGNALS TRANSFORMED INTO VISUALS



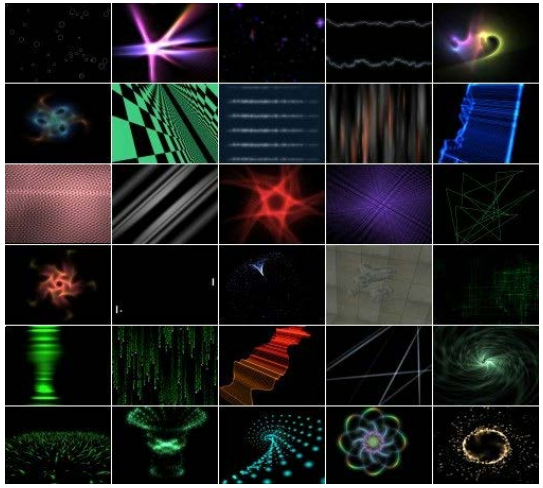
Sabrina Ratte, Visites Possibles (2014)



Charline Dally & Estelle Schorpp, Dream Machine, film - a/v performance (2025)

Mapping Sound To Visual

- **Most simply:** Creatively mapping qualities of sound to qualities of video, or vice versa



Winamp visualizers via stereotaste.weebly.com

Visual elements:

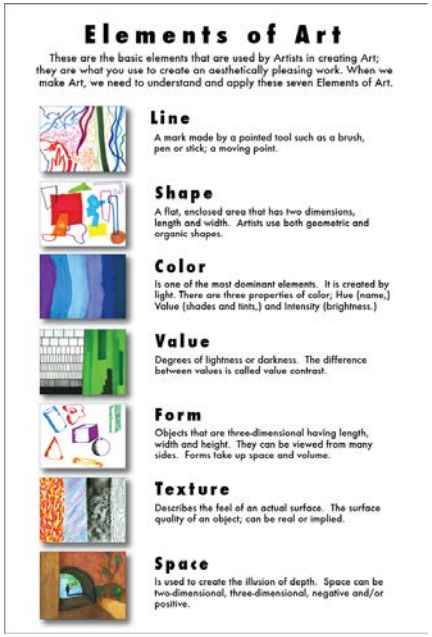
- Line
- Color
- Shape
- Texture
- Space
- ++

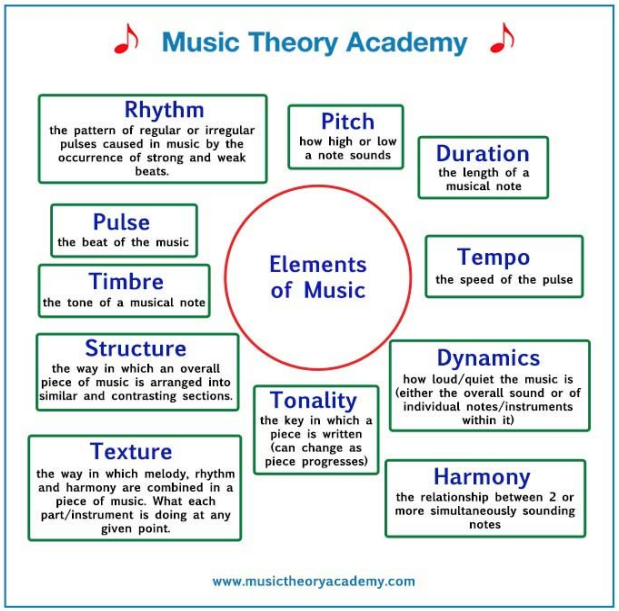
Sonic elements:

- Pitch
- Loudness
- Rhythm
- Duration
- +++

Elements of art via Printable templates free; Music Theory via eecop.org; Principles of Design via Printable templates free

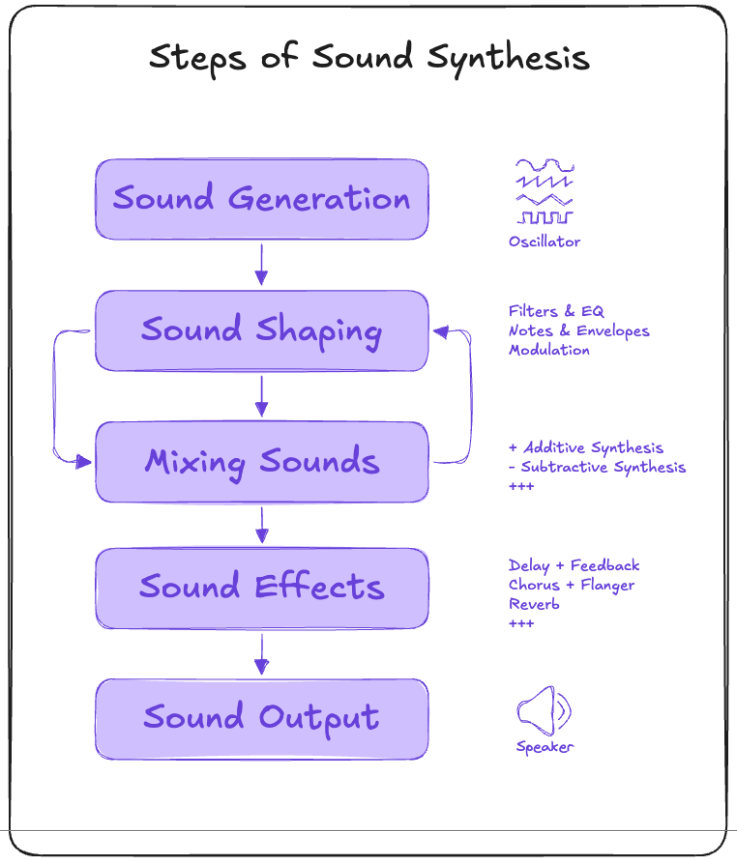
Basic Visual + Sonic Elements + Principles Of Design

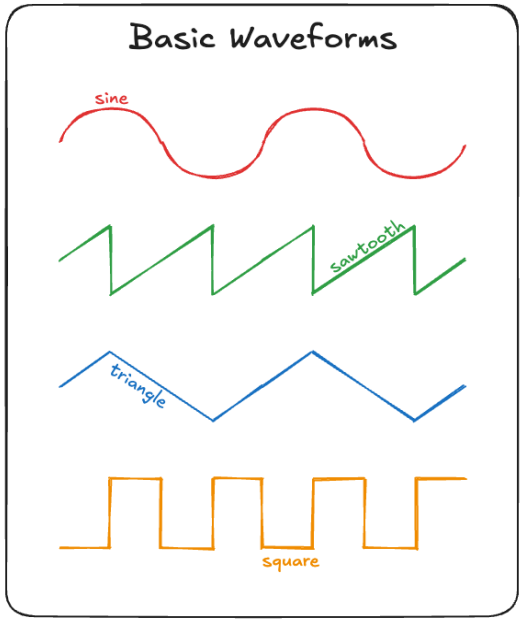


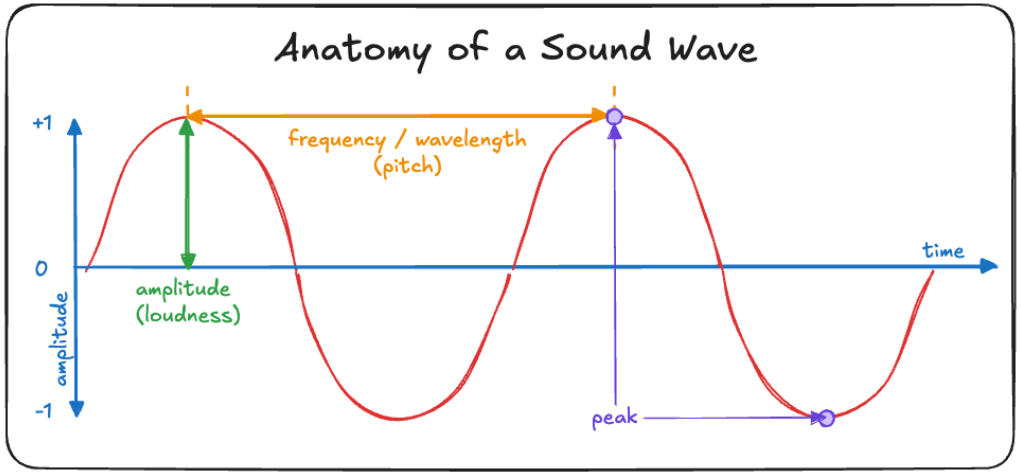


Elements of art via Printable templates free; Music Theory via eecop.org

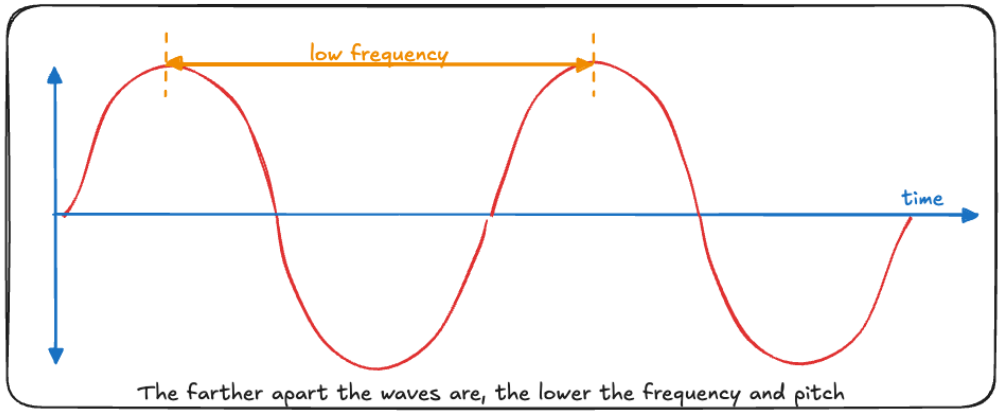
SOUND SYNTHESIS


Steps of Sound Synthesis
Sound Generation
Oscillator
Sound Shaping
Filters & EQ
Notes & Envelopes
Modulation
Mixing Sounds
+ Additive Synthesis
- Subtractive Synthesis
+++
Sound Effects
Delay + Feedback
Chorus + Flanger
Reverb
+++
Sound Output
Speaker

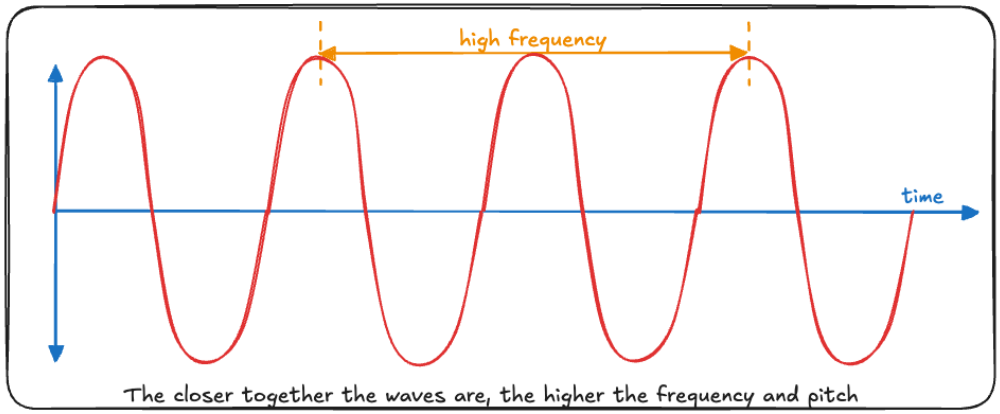

Basic Waveforms
sine
sawtooth
triangle
square


Anatomy of a Sound Wave
+1
0
-1
amplitude
frequency / wavelength
(pitch)
amplitude
(loudness)
time
peak

Frequency + Pitch

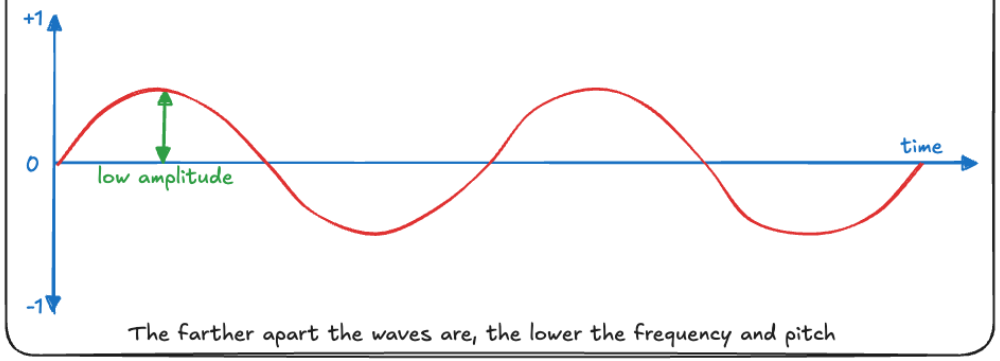


The farther apart the waves are, the lower the frequency and pitch

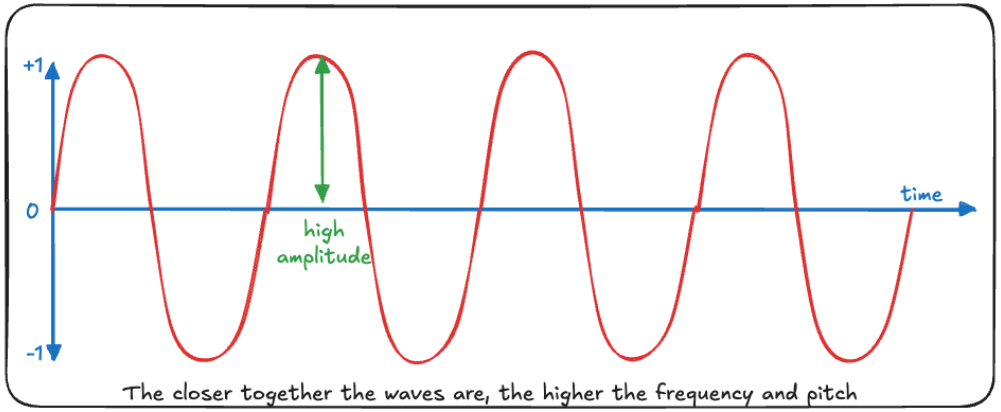


The closer together the waves are, the higher the frequency and pitch

Amplitude + Loudness



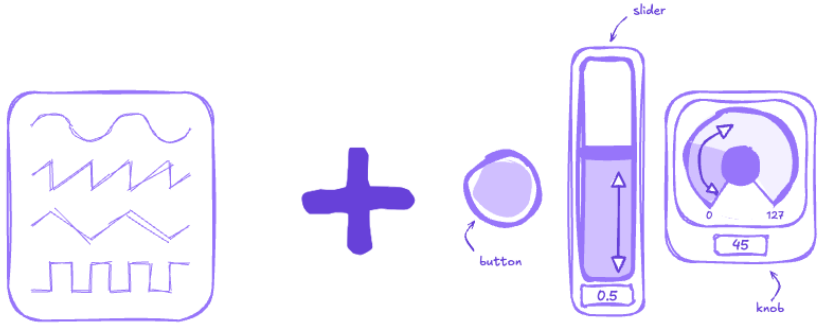
The farther apart the waves are, the lower the frequency and pitch



The closer together the waves are, the higher the frequency and pitch

What is an audio oscillator?

Most simply, a pure tone generator!



Generate Sound Waves

Generate a continuous alternating waveform between 20 - 20,000 Hz

Control the Tone

Knobs, sliders, or buttons that allow you to change the type of waveform, pitch, and loudness

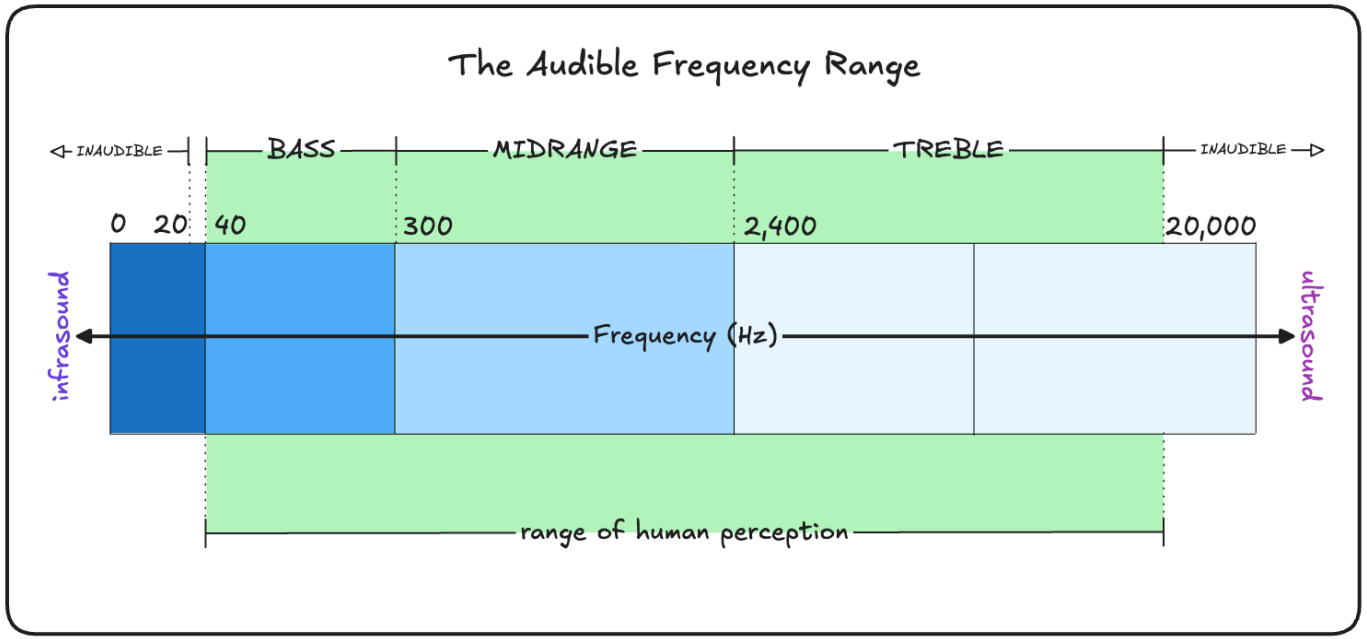
Now Let's Look At Some Waves In MaxMSP

- oscillators, amplitudes + frequencies
- midi notes + frequencies



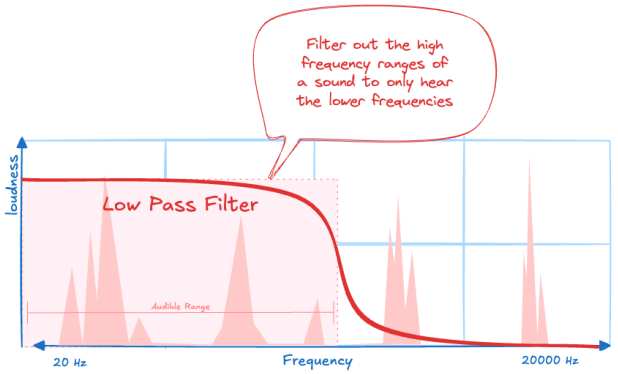
Shaping Sound..

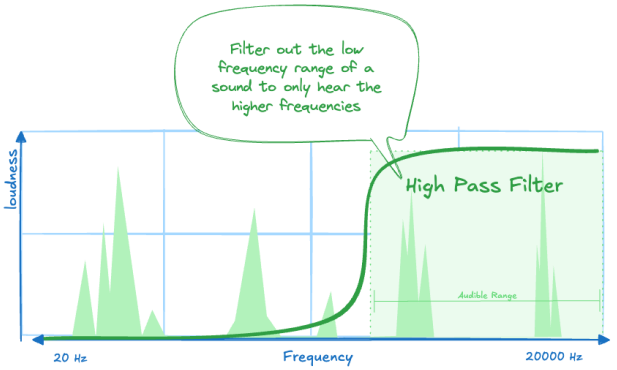
FREQUENCY FILTERING

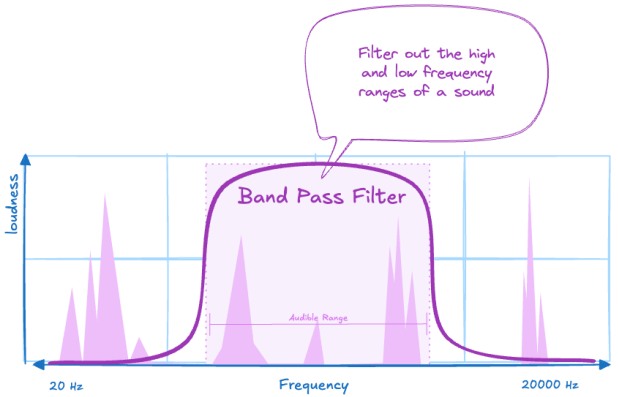


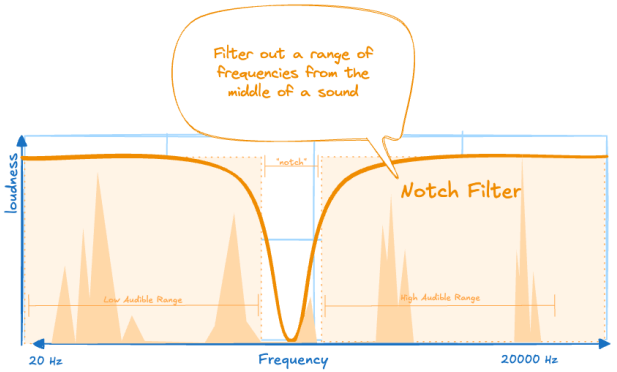
Audio Filtering

(removing frequency ranges from a sound)







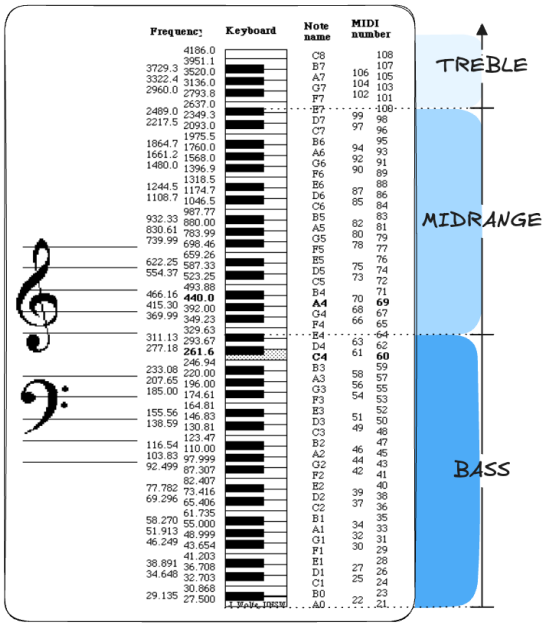


Shaping Sound..

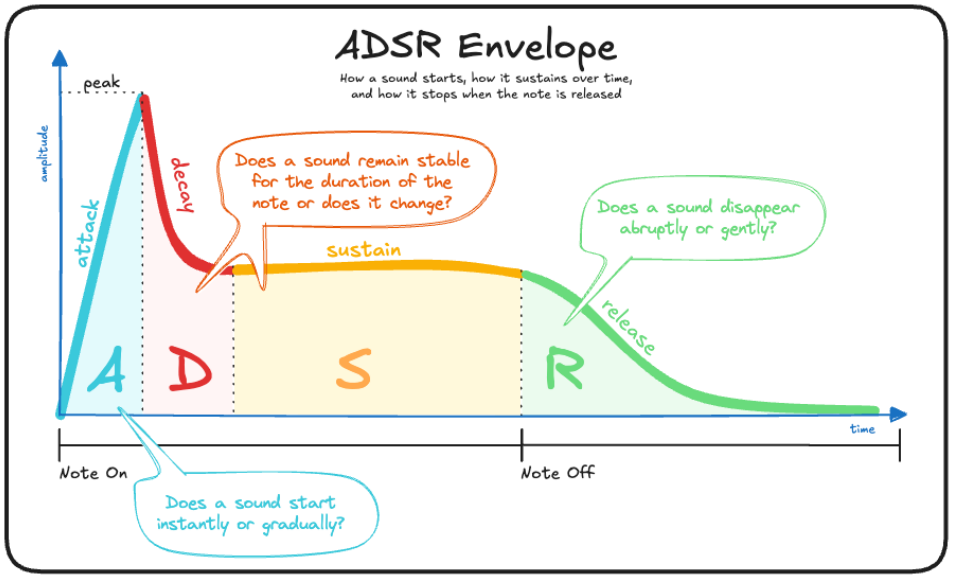
NOTES + ENVELOPES

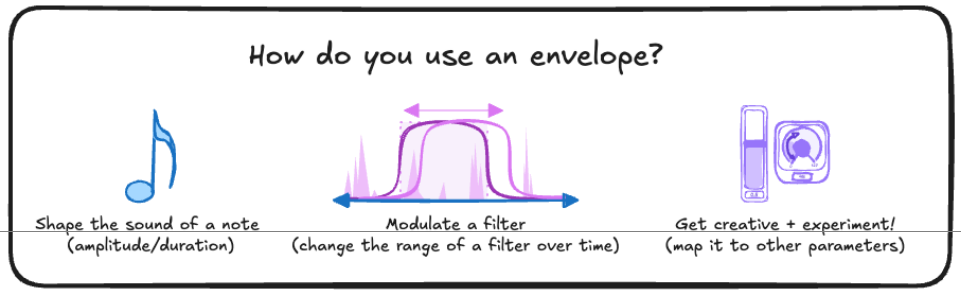
Notes + Frequencies

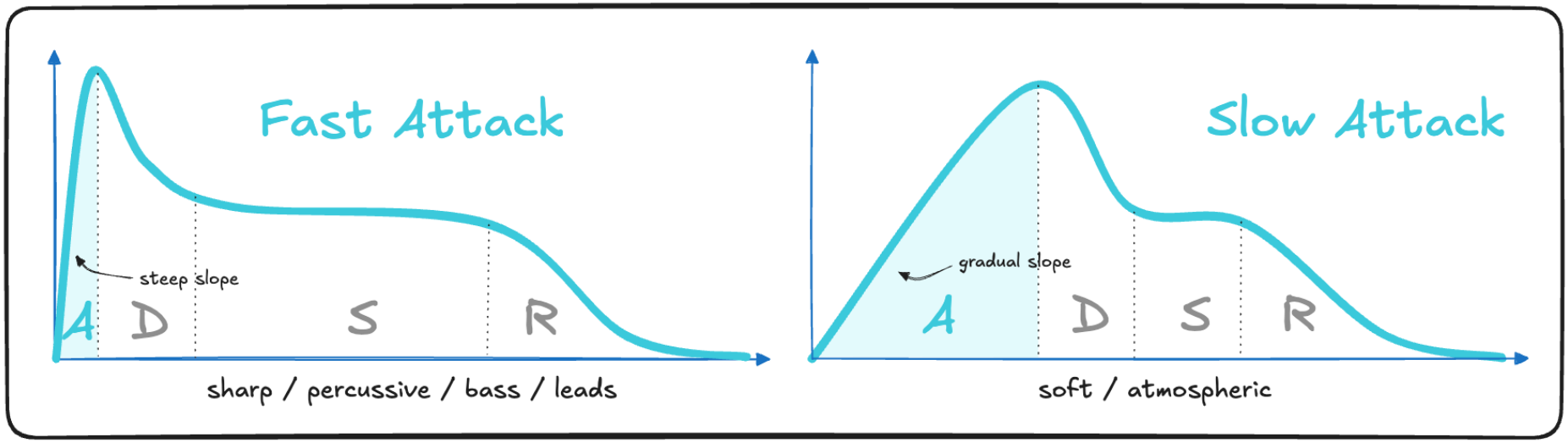
Guess what? Musical notes correspond to specific sound wave frequencies!

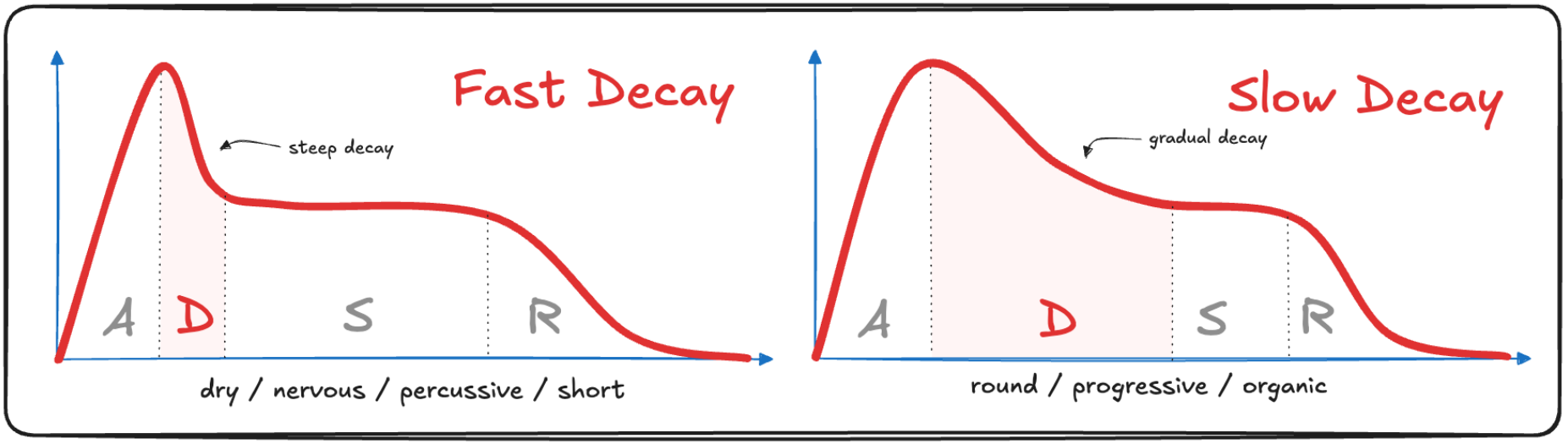


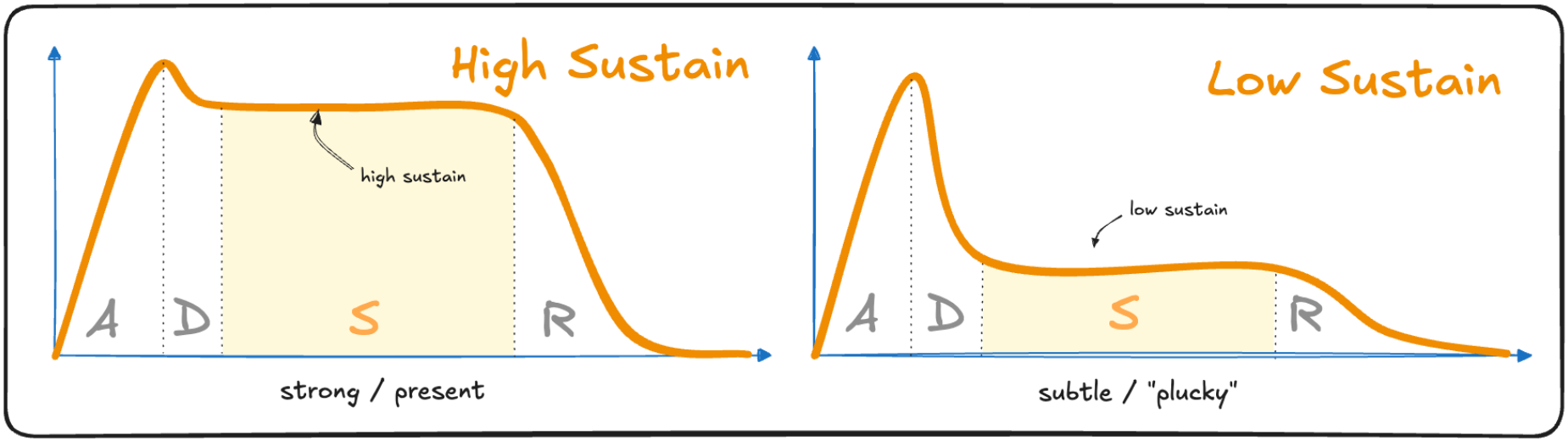
Note names, MIDI numbers and frequencies

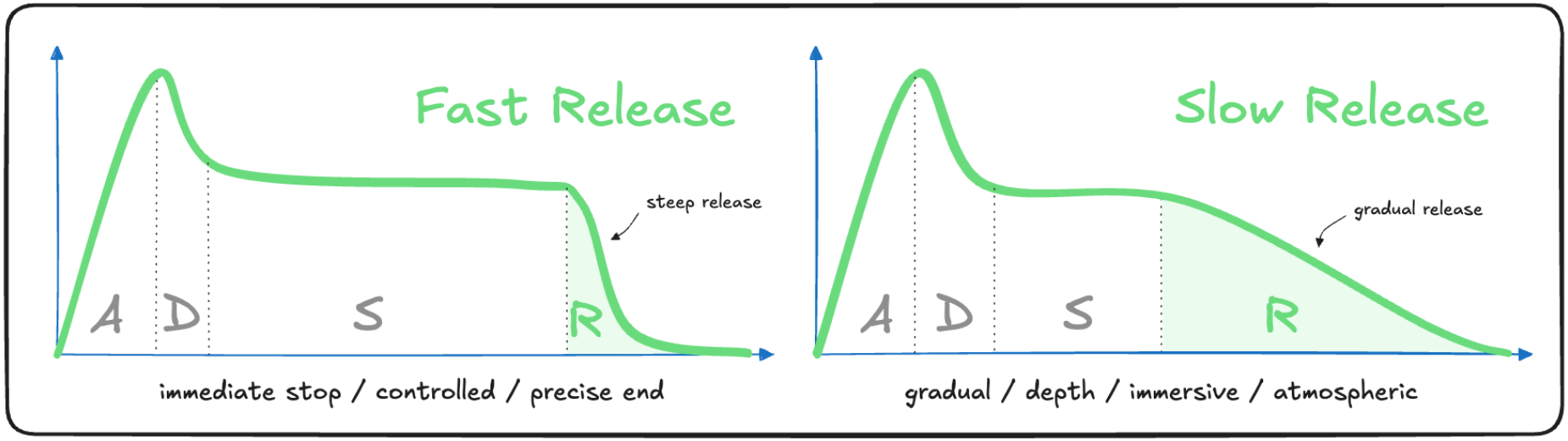

ADSR Envelope
How a sound starts, how it sustains over time, and how it stops when the note is released
peak
amplitude
attack
decay
sustain
release
A
D
S
R
time
Note On
Note Off
Does a sound remain stable for the duration of the note or does it change?
Does a sound disappear abruptly or gently?
Does a sound start instantly or gradually?


How do you use an envelope?
Shape the sound of a note
(amplitude/duration)
Modulate a filter
(change the range of a filter over time)
Get creative + experiment!
(map it to other parameters)


Fast Attack
steep slope
A
D
S
R
sharp / percussive / bass / leads
Slow Attack
gradual slope
A
D
S
R
soft / atmospheric

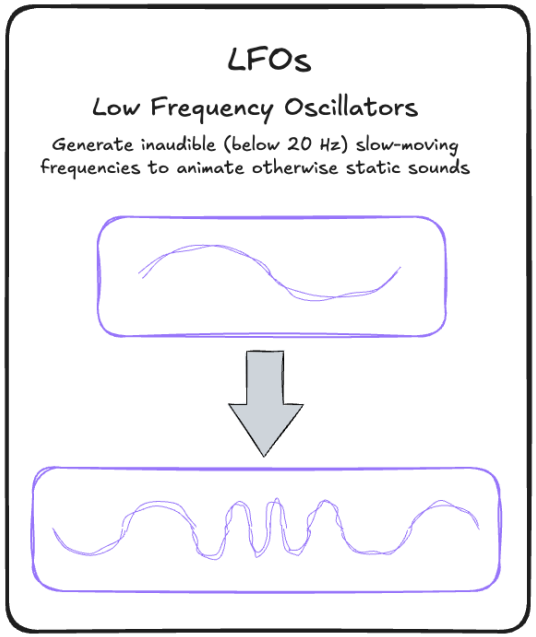

Fast Decay
steep decay
A
D
S
R
dry / nervous / percussive / short
Slow Decay
gradual decay
A
D
S
R
round / progressive / organic


High Sustain
high sustain
A
D
S
R
strong / present
Low Sustain
low sustain
A
D
S
R
subtle / "plucky"


Fast Release
steep release
A
D
S
R
immediate stop / controlled / precise end
Slow Release
gradual release
A
D
S
R
gradual / depth / immersive / atmospheric

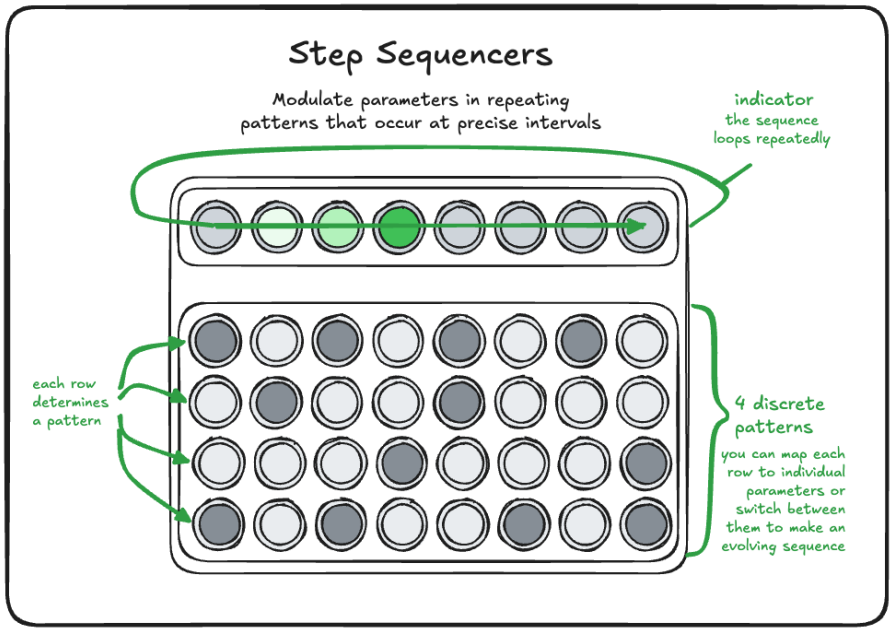
Shaping Sound..

LFOS



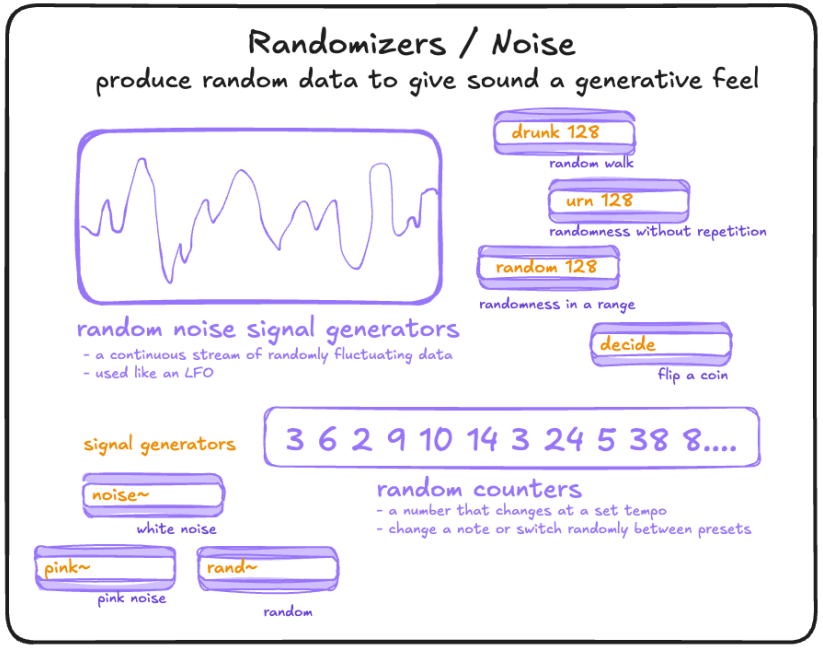
Shaping Sound..

SEQUENCERS



Shaping Sound..

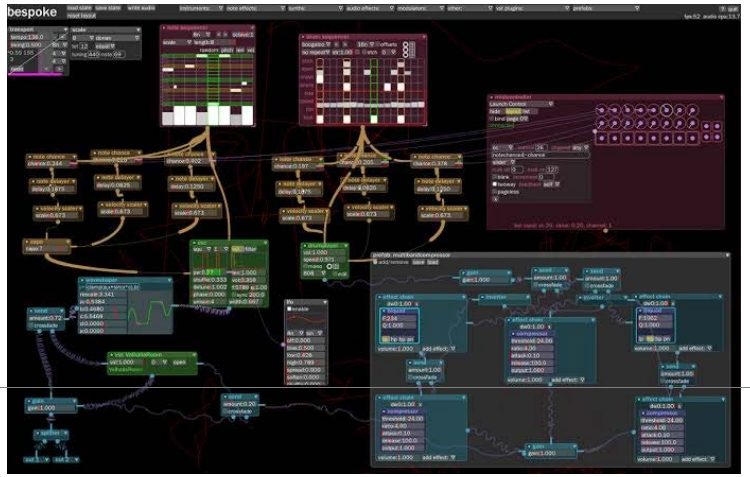
RANDOMIZERS



Sound Synthesis Software







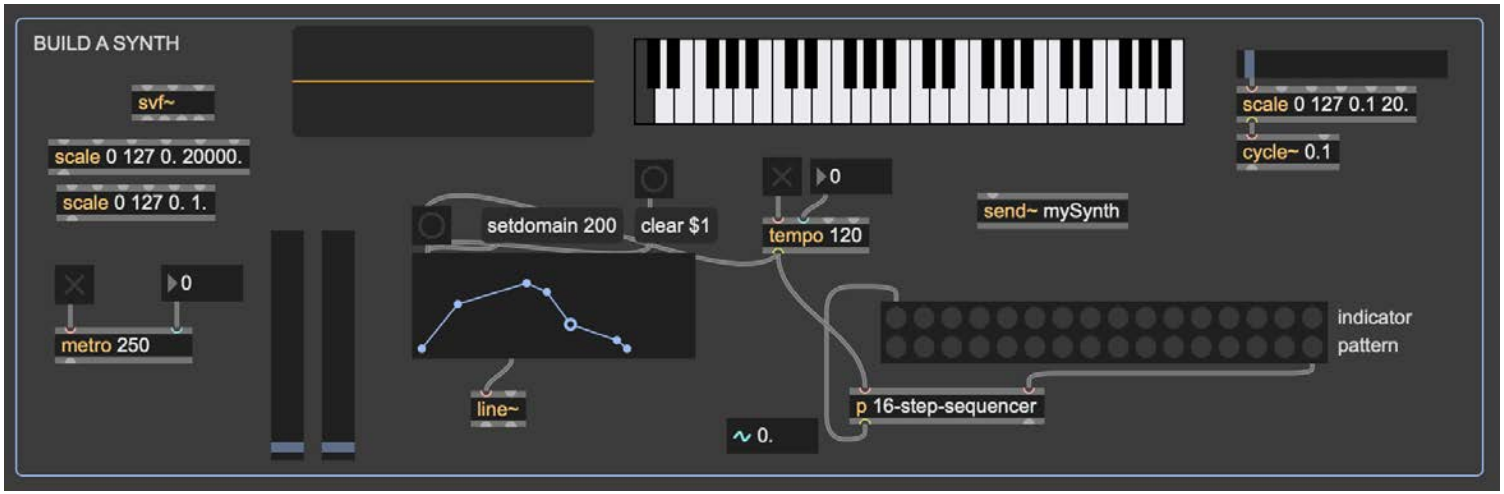
[VCV Rack](); [Ableton](); [Bespoke Synth]();

VST Plugins - Add Synthesis To Your DAW



Search for free VST plugins online

Activity 1 : Build A Synth (35 Minutes)



- Download patch from Moodle
- Team up with classmates or work on your own

WHAT MAKES UP A DIGITAL IMAGE?

- *Image resolution*
- *Aspect ratio*
- *Pixels + color planes*

image-to-sound + sound-to-image

TRANSFORMING AND MAPPING DATA

Steps:

- Decide on a direction - this will determine your approach
- Decide what qualities of sound or image you want to build relationships between
- Make a map
- Understand how to access that data and manipulate it

techniques

SONIFICATION

Sonification - Making sound from image, video, or other data

- Image scanning
- Video sonifying

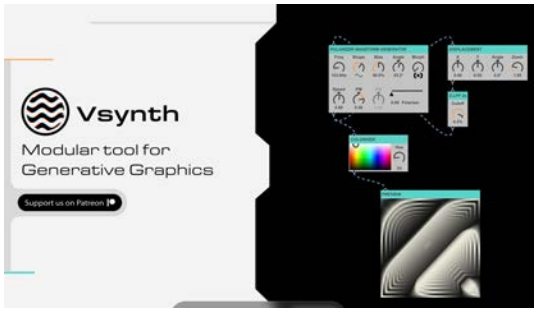
VISUALIZATION

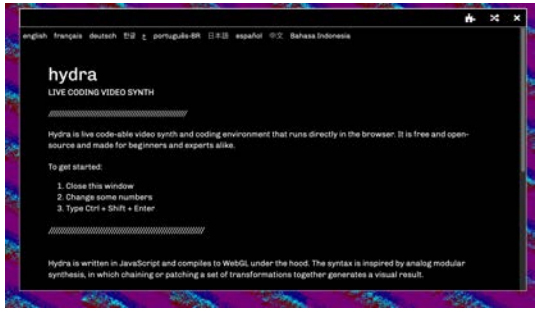
Making visuals from sound

- Note/freq or amplitude to colour
- Parameter mapping (Ex. Audio-reactivity)

video synthesis software

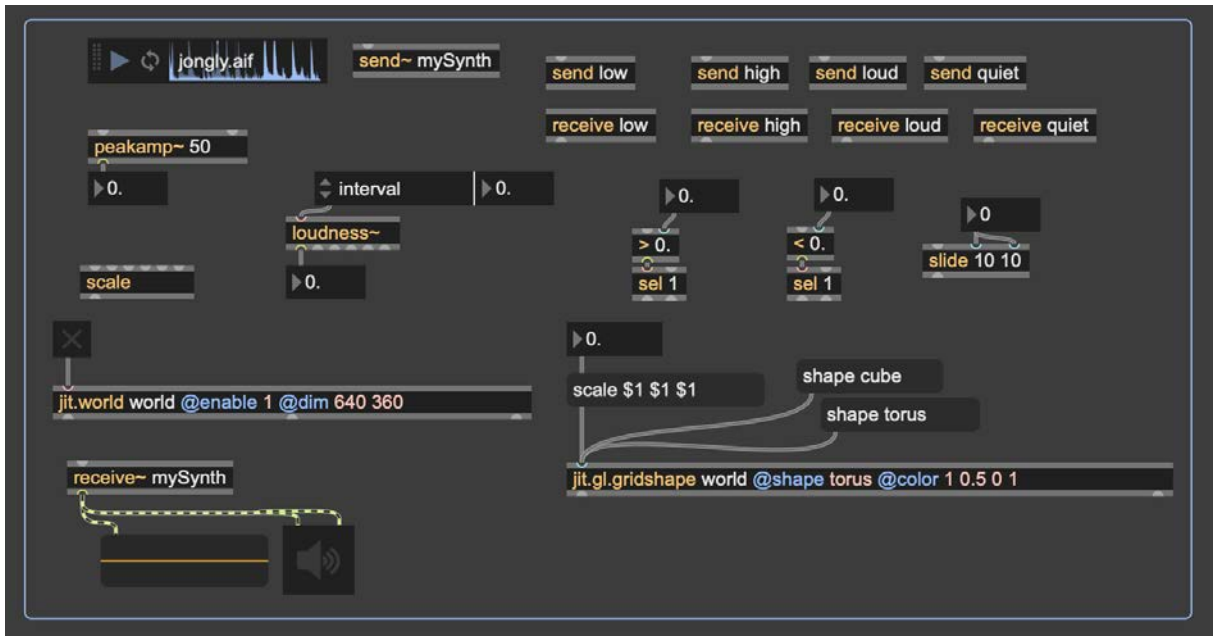






Lumen (Analog synth replicator); Vsynth (Maxmsp tool); Hydra

Activity 2: Make Your Synth Visible (35 Mins)



- Download patch from Moodle
- Team up with classmates or work on your own

TRANSFORMATION PROJECT

SHOW + TELL

WRAP UP - FINAL REMINDERS

- ***Next week***
  - *Open studio - bring your materials to work in class!*
  - *Intro to Gesture Project*
  - *Critique prep + writing artist statements*
  - *Documentation for the Transformation Project*
- ***Map Contribution Set #2*** *- Friday Oct. 23*
- ***Sketch #2*** *- Oct 26*
- ***Transformation Project*** *- Nov. 2*