

Sequencing ...

- chance as a compositional tool

Mari, Sebastian and Anders 2021

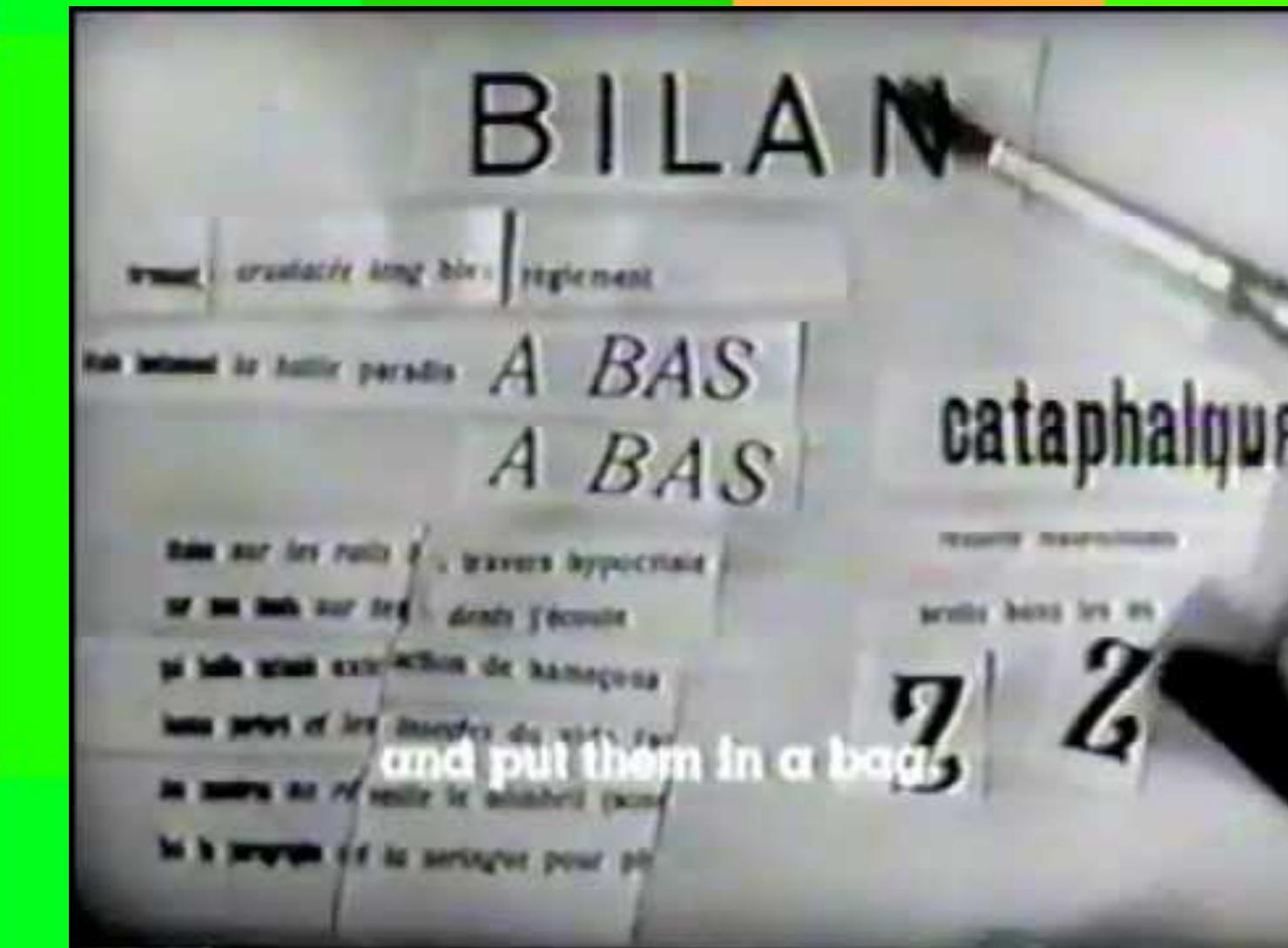
**«Chance comes in here
to give us the unknown»**

John Cage to Pierre Boulez, January 17, 1950

DaDa

- after the Great War

- Post-war (WW1) depression
- European avant-garde
 - Rejection of logic, reason, aesthetics and modern capitalist society
- Brought in nonsense, irrationality as well as humour, to the art scene
- Anti-art



Fluxus

1960s and 1970s

- Worldwide avant-garde movement,
- Reacted upon the restrictions of human culture and art
- Explored un-normal human behaviour
- Jokes and gags, live-performance
- Inspired by DaDa, but approached life from all angles

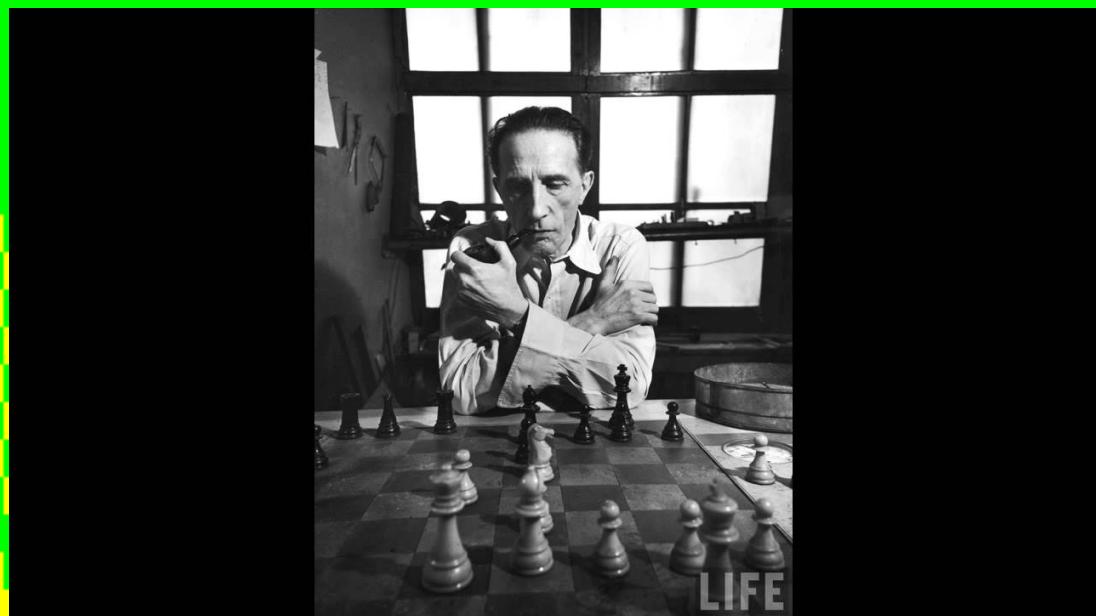
Chance & indeterminacy in music

- *Erratum Musical* (1913), Marcel Duchamp
 - Dadaistic composition for three voices
- *Double Music* (1941), John Cage/Lou Harrison
 - Independent pieces performed together as one
- *Music of Changes* (1951), John Cage
 - Set of rules, I Ching used for decisions
- *Give Guitars to People* (2019-), Jochen Arbeit, NATürlich



Fountain (1917), Marcel Duchamp

Chance & indeterminacy in music



- *Erratum Musical* (1913), Marcel Duchamp
 - Dadaistic composition for three voices
- *Double Music* (1941), John Cage/Lou Harrison
 - Independent pieces performed together as one
- *Music of Changes* (1951), John Cage
 - Set of rules, I Ching used for decisions
- *Give Guitars to People* (2019-), Jochen Arbeit, NATürlich

Chance & indeterminacy

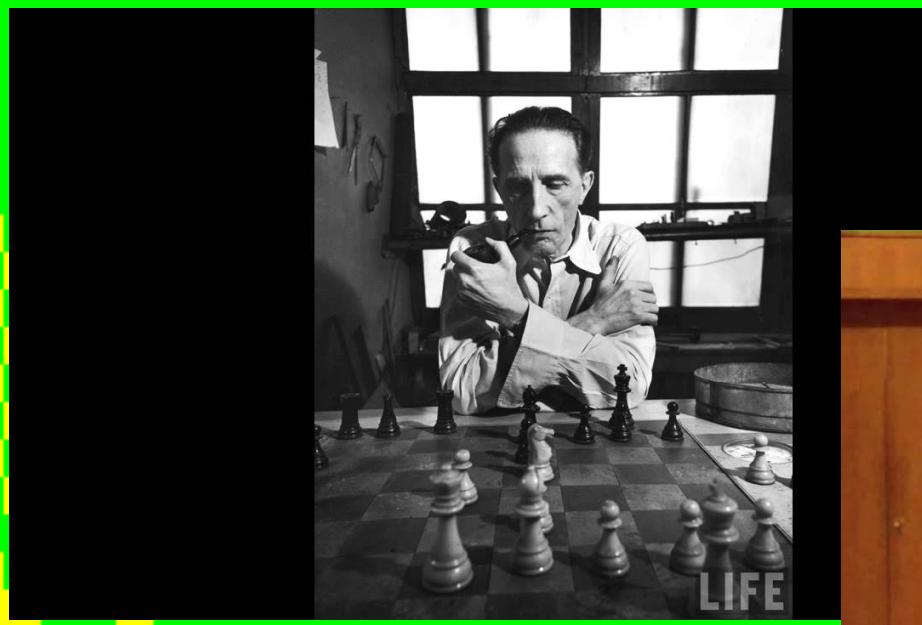
in music



- *Erratum Musical* (1913), Marcel Duchamp
 - Dadaistic composition for three voices
- *Double Music* (1941), John Cage/Lou Harrison
 - Independent pieces performed together as one
- *Music of Changes* (1951), John Cage
 - Set of rules, I Ching used for decisions
- *Give Guitars to People* (2019-), Jochen Arbeit, NATürlich

Chance & indeterminacy in music

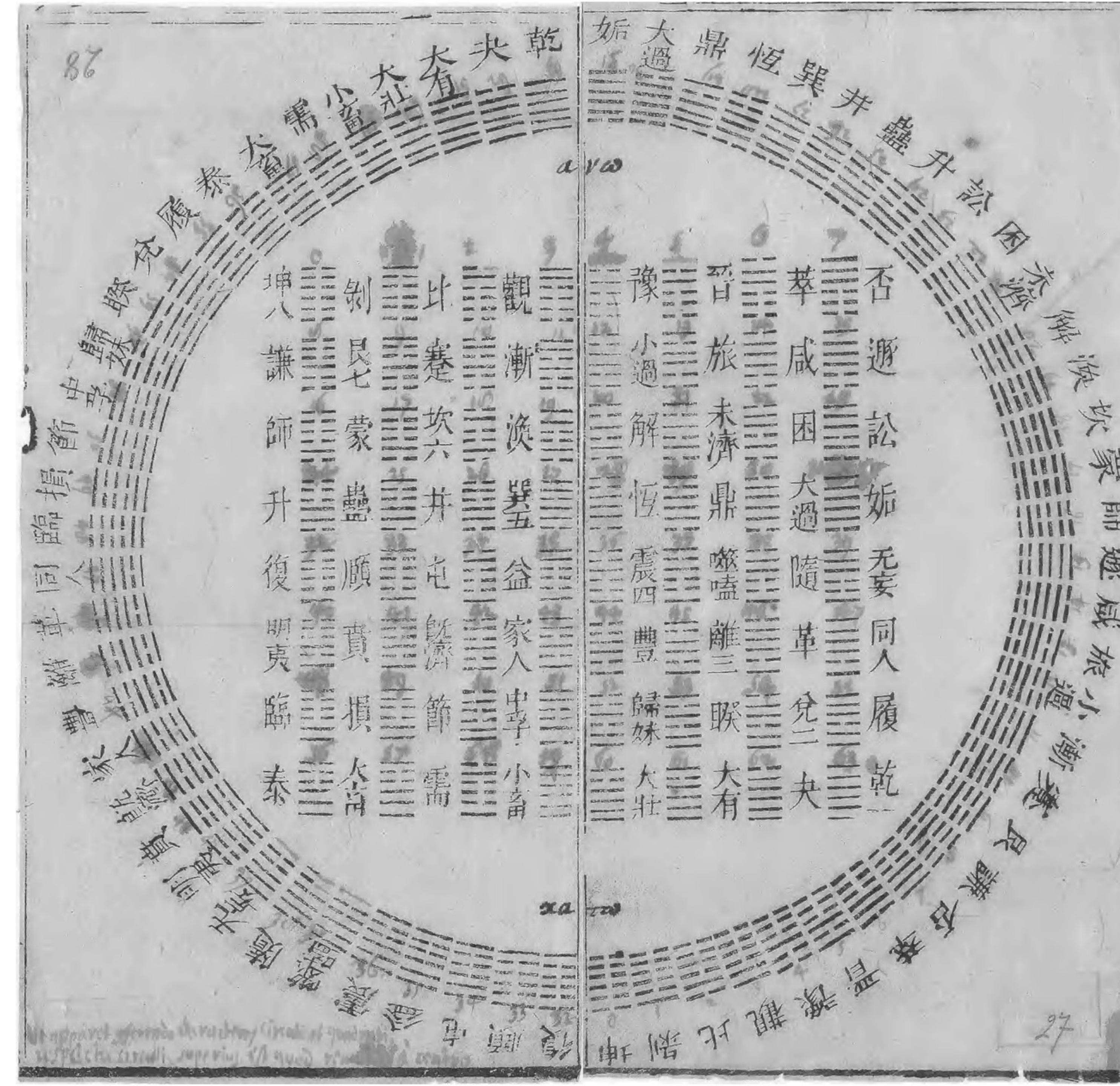
- *Erratum Musical* (1913), Marcel Duchamp
 - Dadaistic composition for three voices
- *Double Music* (1941), John Cage/Lou Harrison
 - Independent pieces performed together as one
- *Music of Changes* (1951), John Cage
 - Set of rules, I Ching used for decisions
- *Give Guitars to People* (2019-), Jochen Arbeit, NATürlich



I Ching

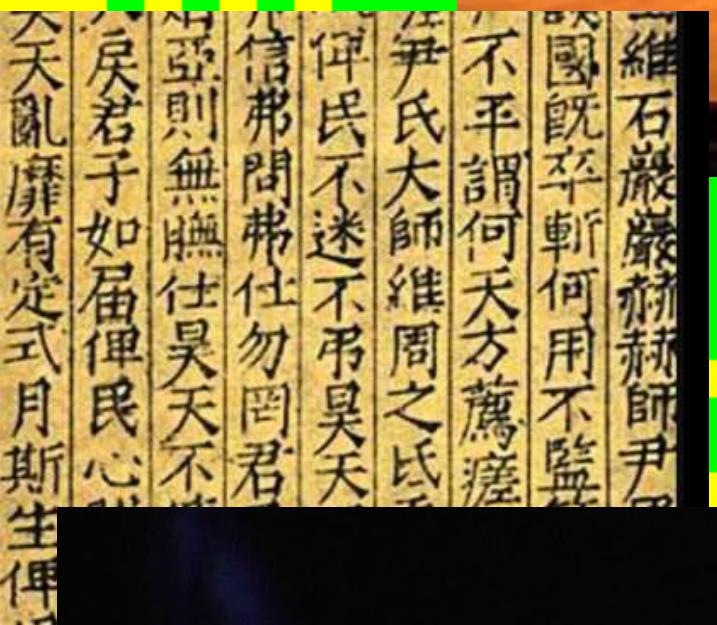
Eastern Philosophy

- *Book of Changes*
- 64 hexagrams
- Six lines, broken (yin) or unbroken (yang)
- Cleromancy, divine will



Chance & indeterminacy in music

- *Erratum Musical* (1913), Marcel Duchamp
 - Dadaistic composition for three voices
- *Double Music* (1941), John Cage/Lou Harrison
 - Independent pieces performed together as one
- *Music of Changes* (1951), John Cage
 - Set of rules, I Ching used for decisions
- *Give Guitars to People* (2019-), Jochen Arbeit, NATürlich

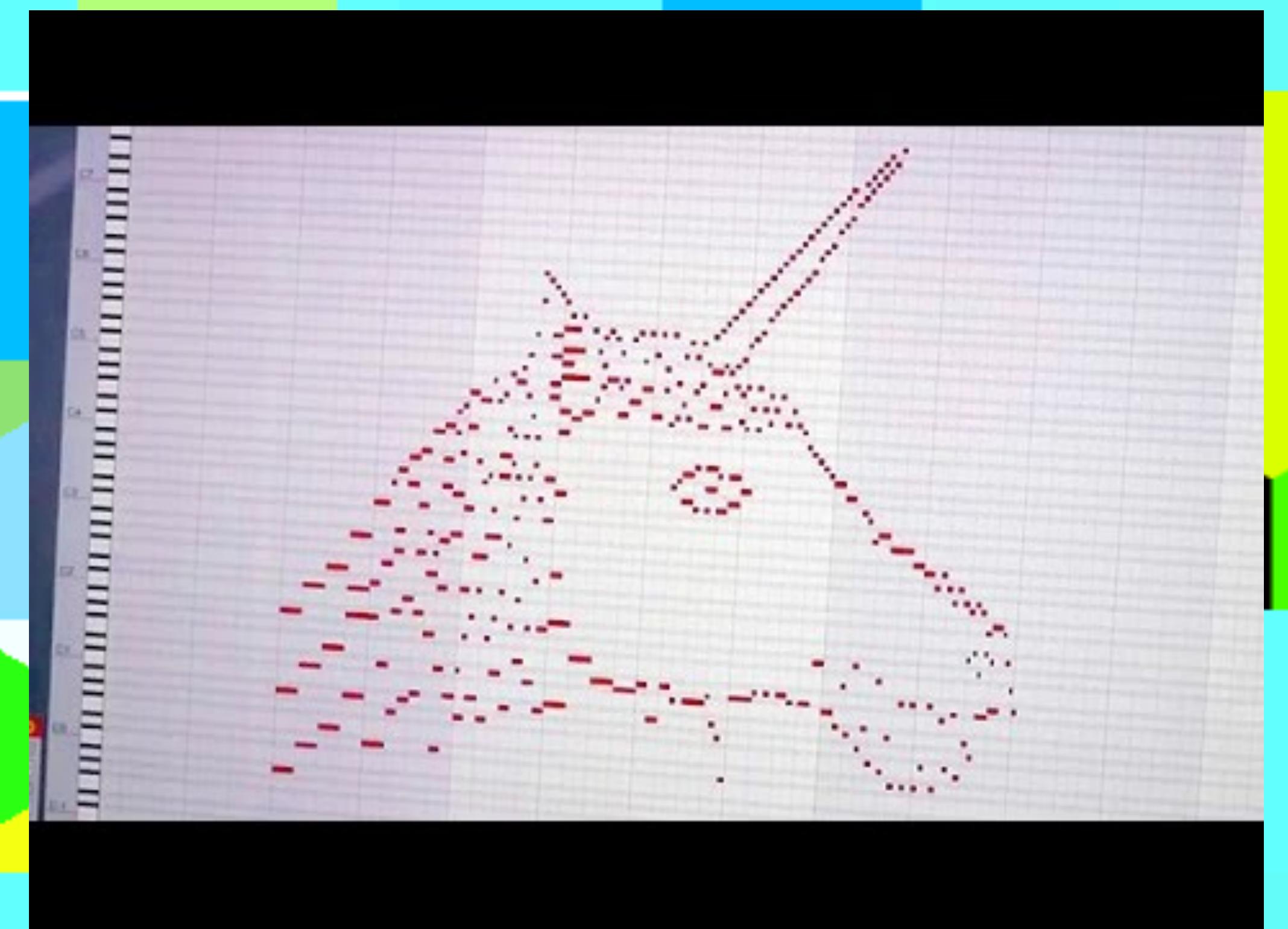


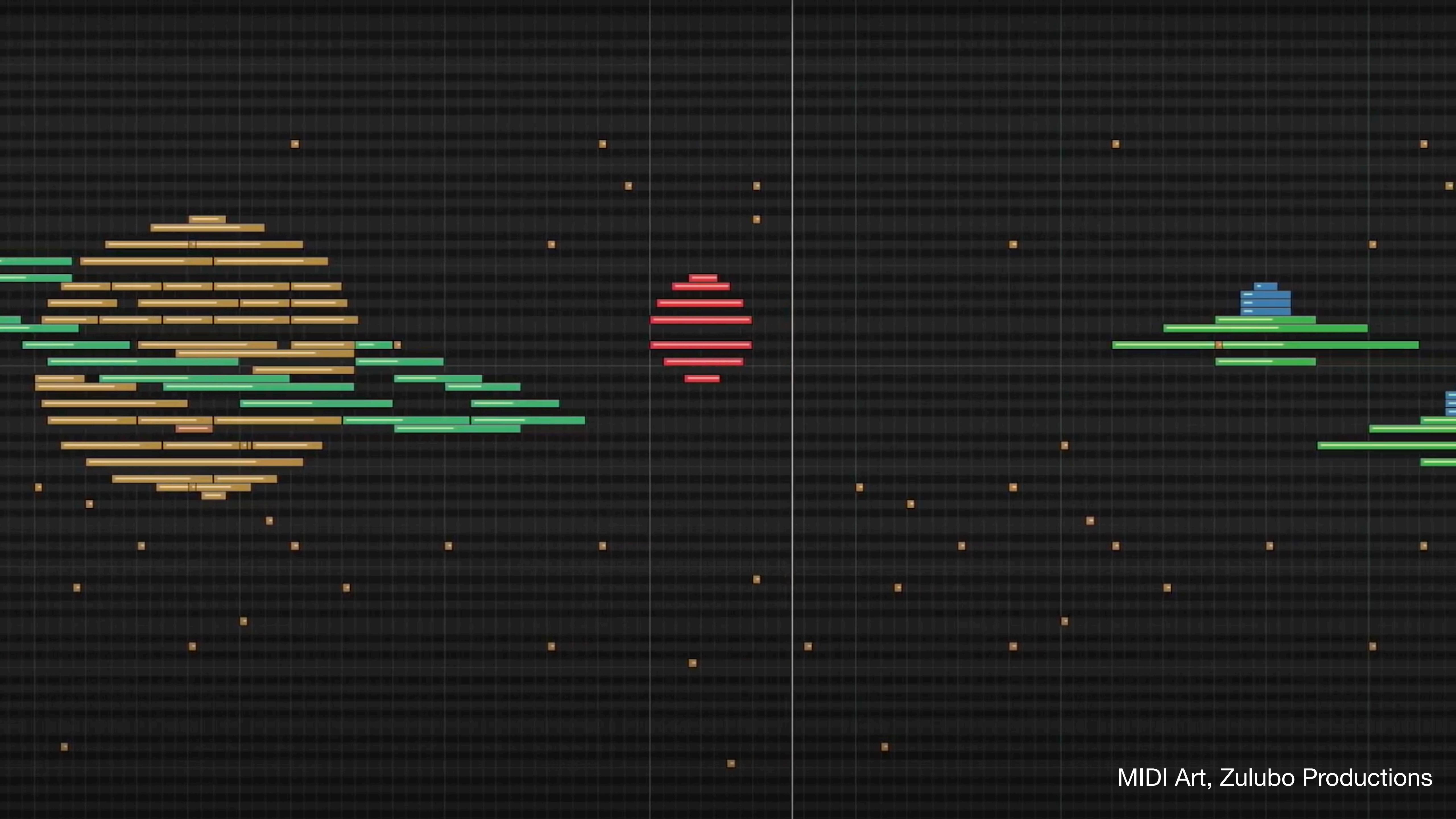
From Fluxus to MIDI Art

in music

- *Glorious MIDI unicorn* (now), youtuber Andrew Huang

- Drawing pictures with MIDI notes
- Focus on making it sound like music





MIDI Art, Zulubo Productions

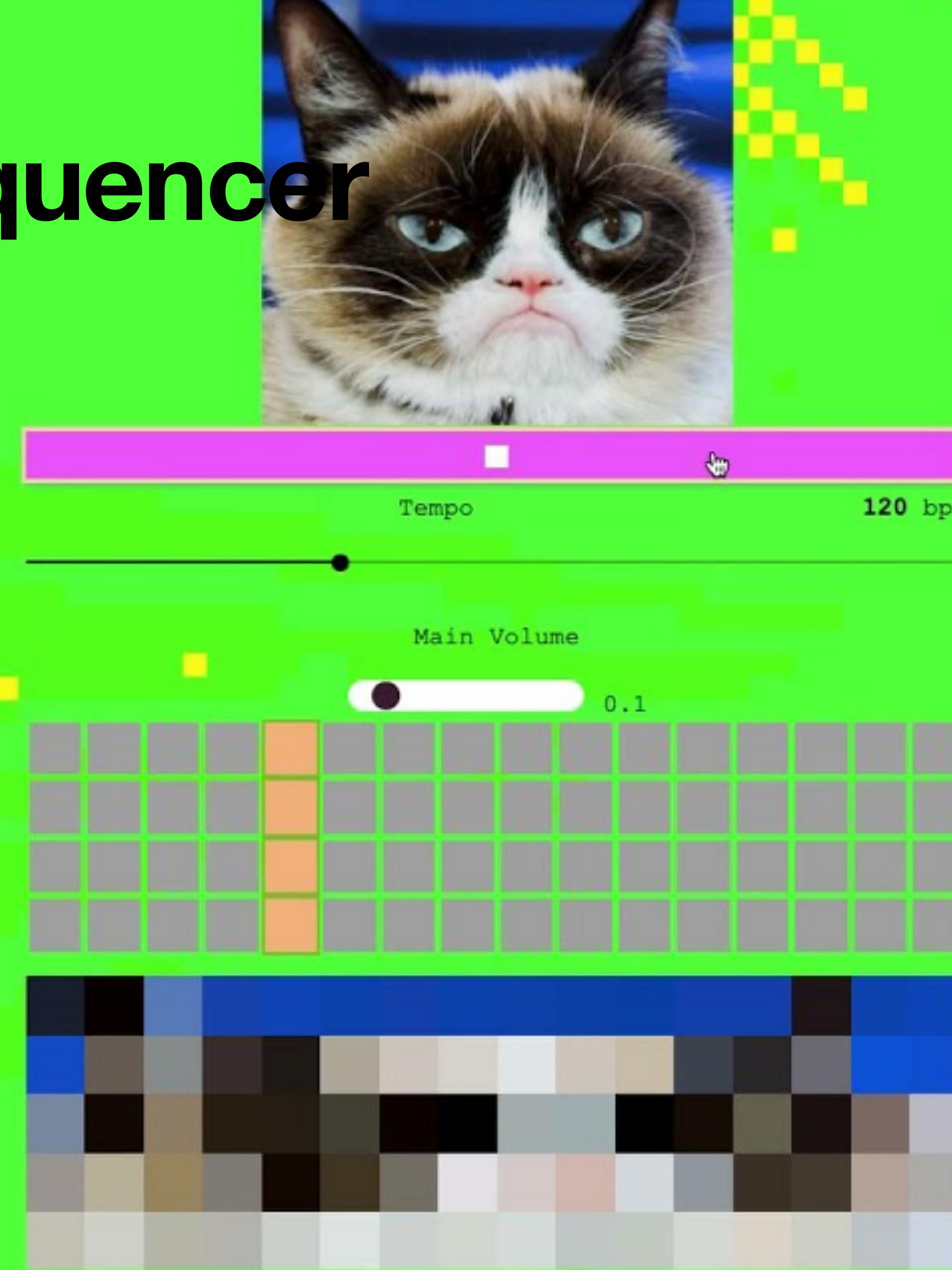
System Sounds

Pillars of Creation Sonification

- NASA-collaboration
- Translating the universe into sounds



The Pixel Sequencer



The Pixel Sequencer

About

- Interactive web-application
- Adjust parameters
- Upload picture
- Press Play
- Add drums
- Explore and compose

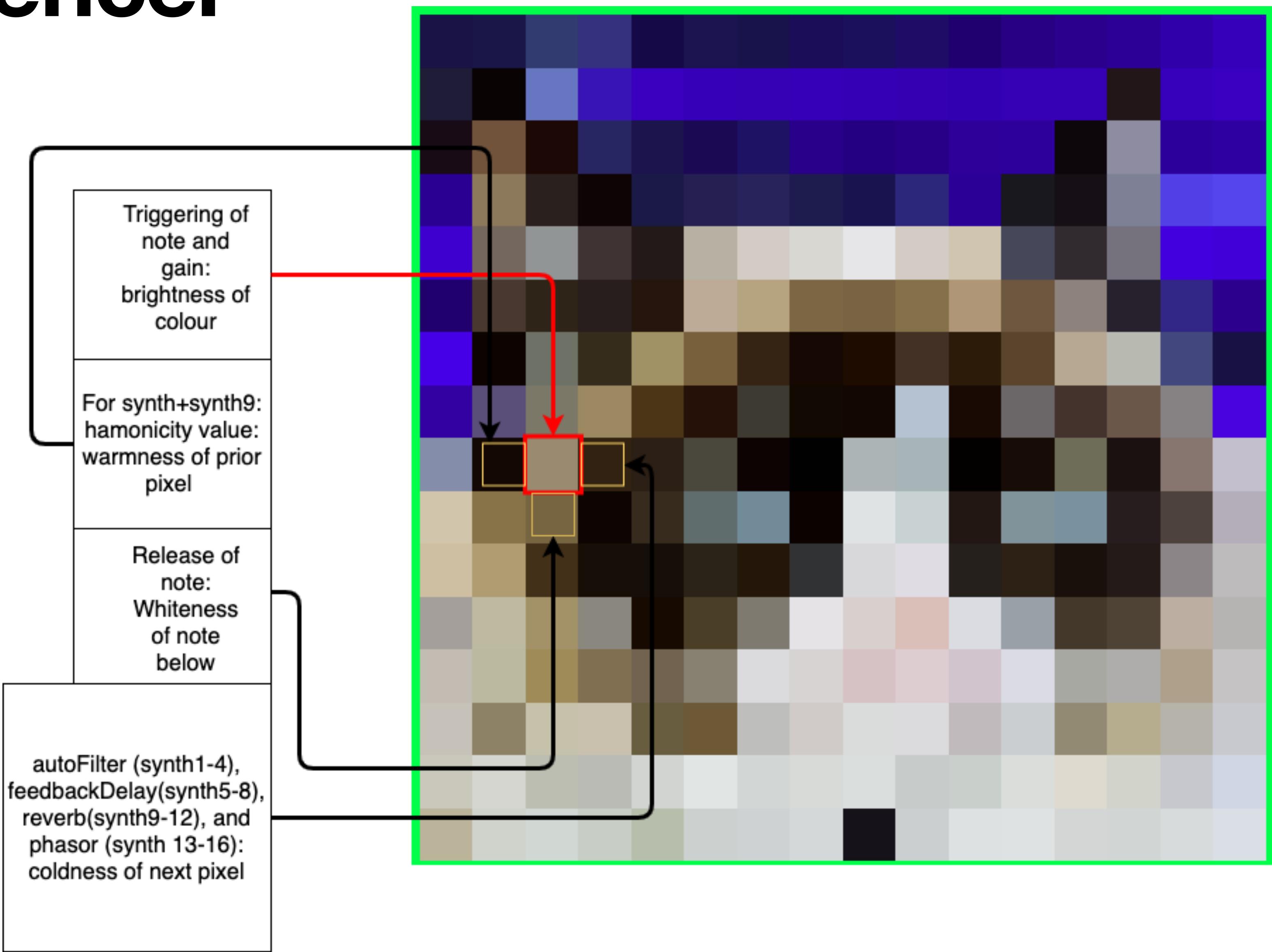
The Pixel Sequencer

Format

- Accessibility, democratization of art
- Exploring intersection between visual arts and music
- Aesthetics applies to internet trends, retro game(r)s

The Pixel Sequencer

How does it work?

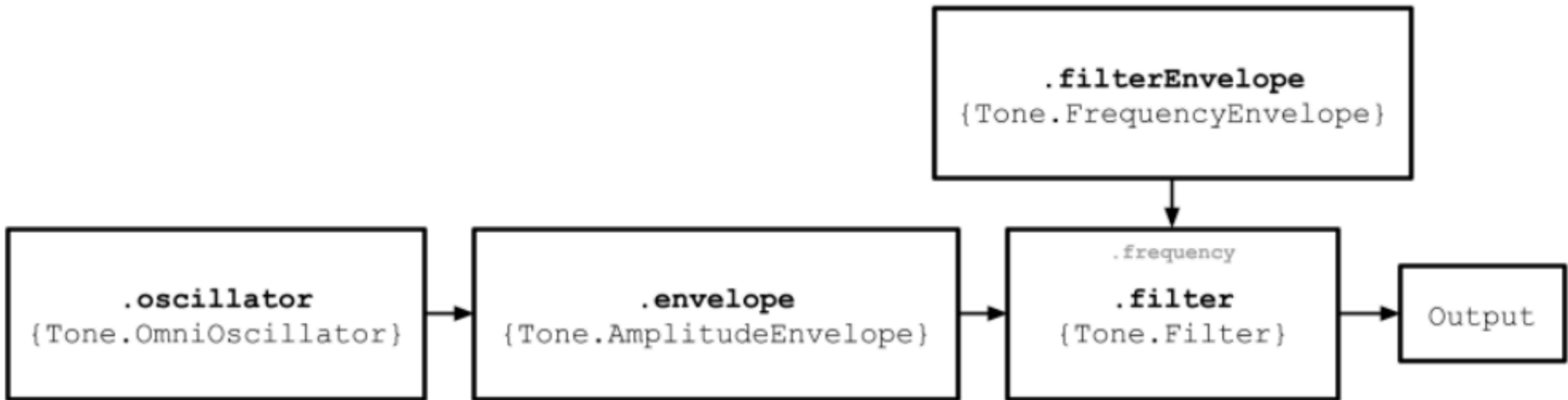


Tone.js over Csound ...

- Interactive synthesis in a browser
- Pre-built synthesizers, implemented by creating a constant
- Subtractive-, FM- and Karplus-strong string synthesis

Routing example

Tone.Monosynth



Setting up a synth using Tone.js

- Pre-built Tone.MonoSynth
- Define waveform
- Amp envelope
- Define filter-type
- Filter envelope
- To master

```
const synth = new Tone.MonoSynth({  
    oscillator: {  
        type: "square"  
    },  
    envelope: {  
        attack: 0.05,  
        decay: 0.1,  
        sustain: 0.5,  
        release: 0.2,  
    },  
    filter: {  
        Q: 1,  
        rolloff: -12,  
        type: "lowpass"  
    },  
    filterEnvelope: {  
        attack: 0.05,  
        baseFrequency: 200,  
        decay: 0.1,  
        exponent: 2,  
        octaves: 3,  
        sustain: 0.5,  
        release: 0.2,  
    },  
}).toDestination();
```