

The Pixel Sequencer

- chance as a compositional tool

Mari, Sebastian and Anders 2021

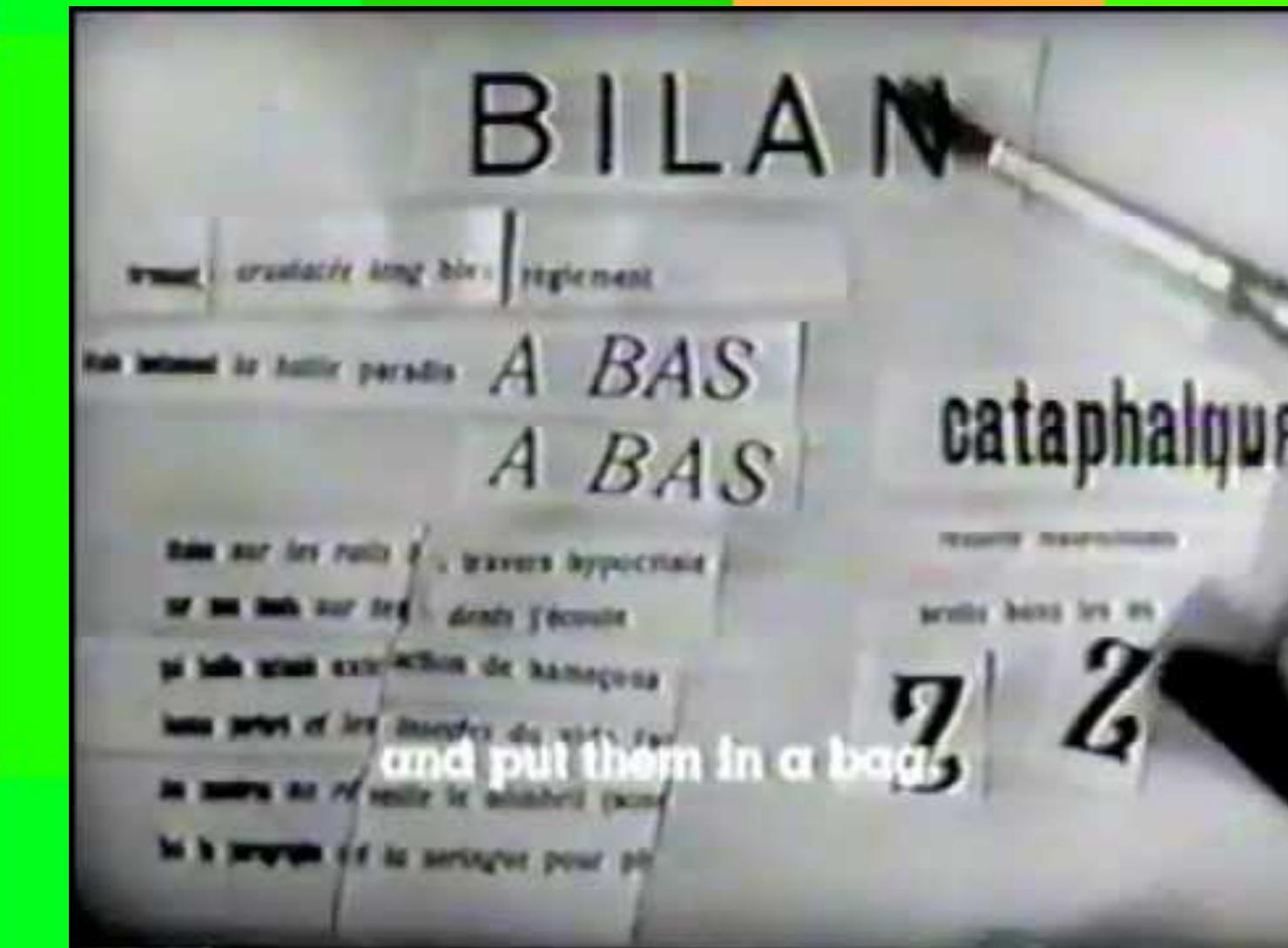
*«Chance comes in here
to give us the unknown»*

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 in modern capitalist society
- Brought in nonsense, irrationality – and 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



Cut Piece (1964), Yoko Ono

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Water Walk (1959), John Cage

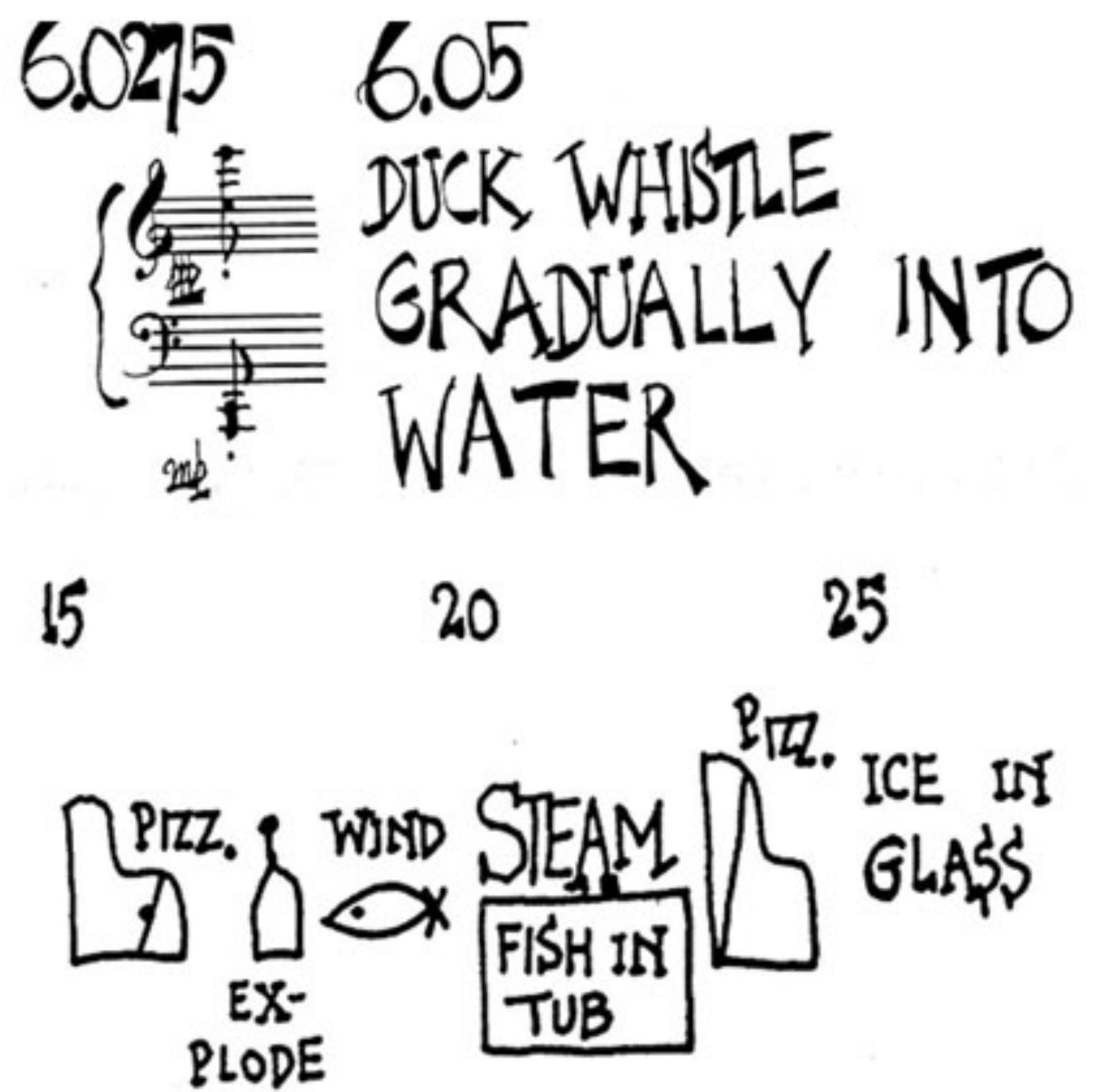


Figure 1. Score details of Water Walk and Water Music: (a) John Cage, Water Music (1952) and (b) John Cage, Water Walk (1959).

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

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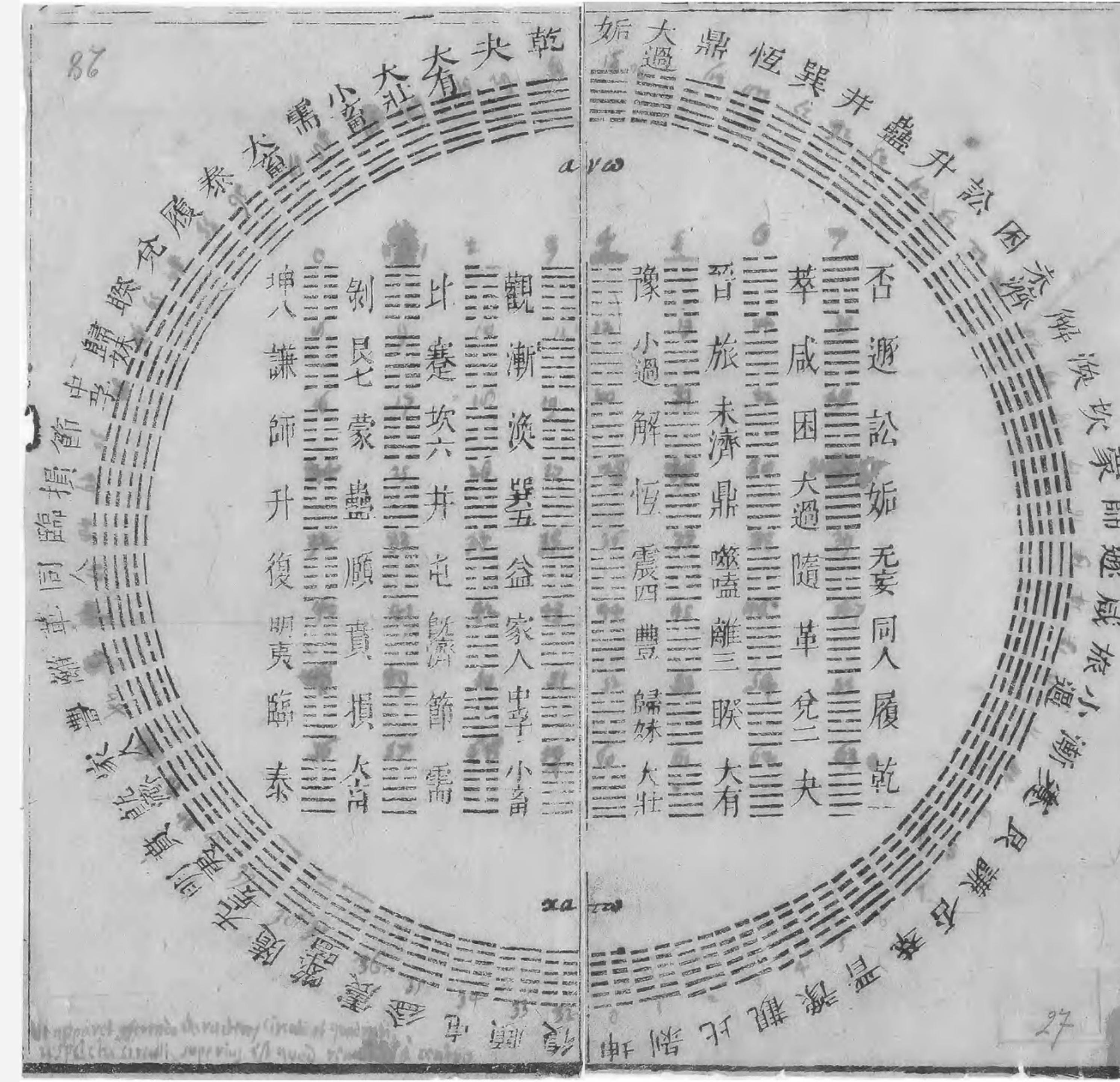


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I Ching Eastern Philosophy

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



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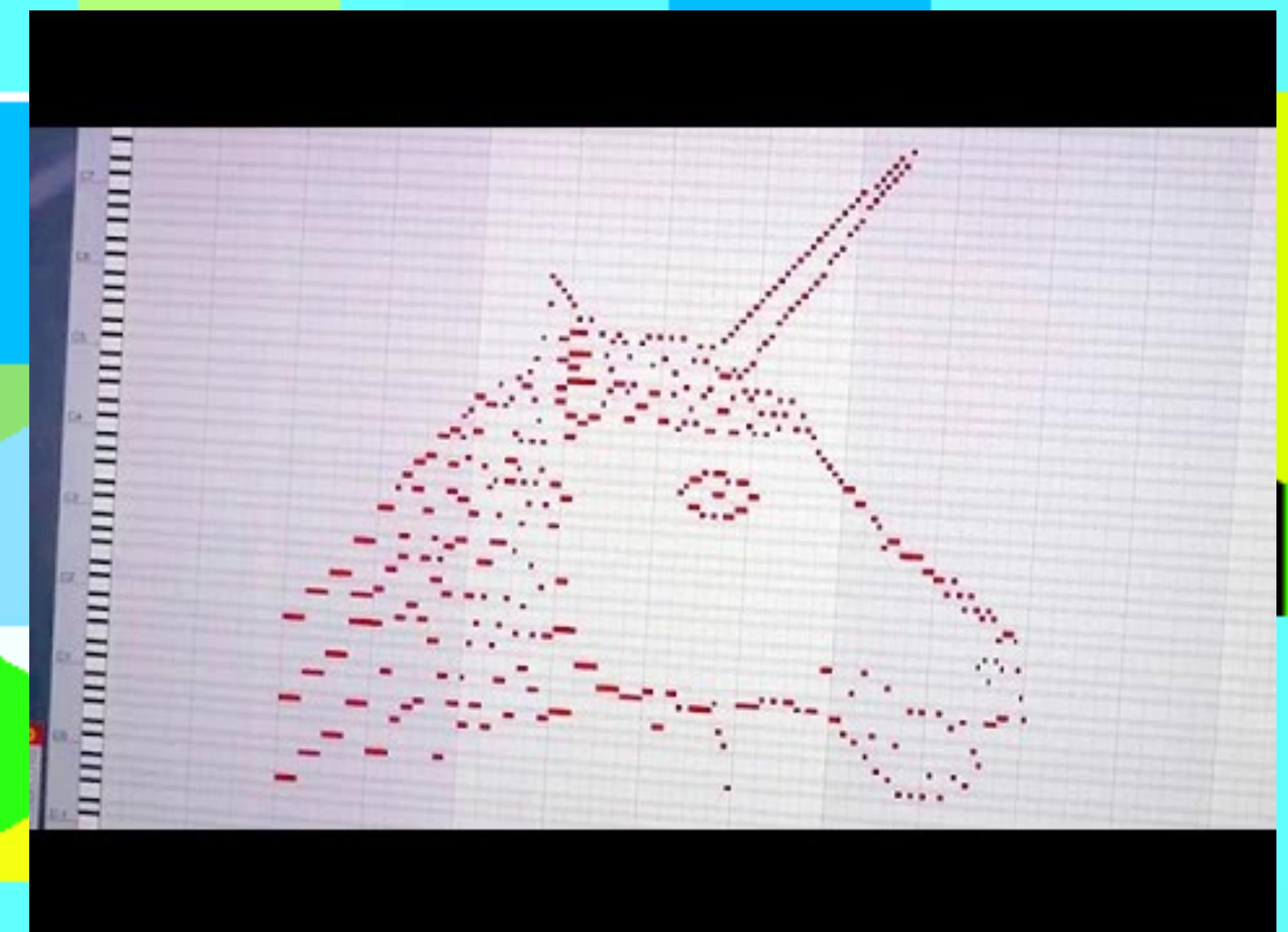


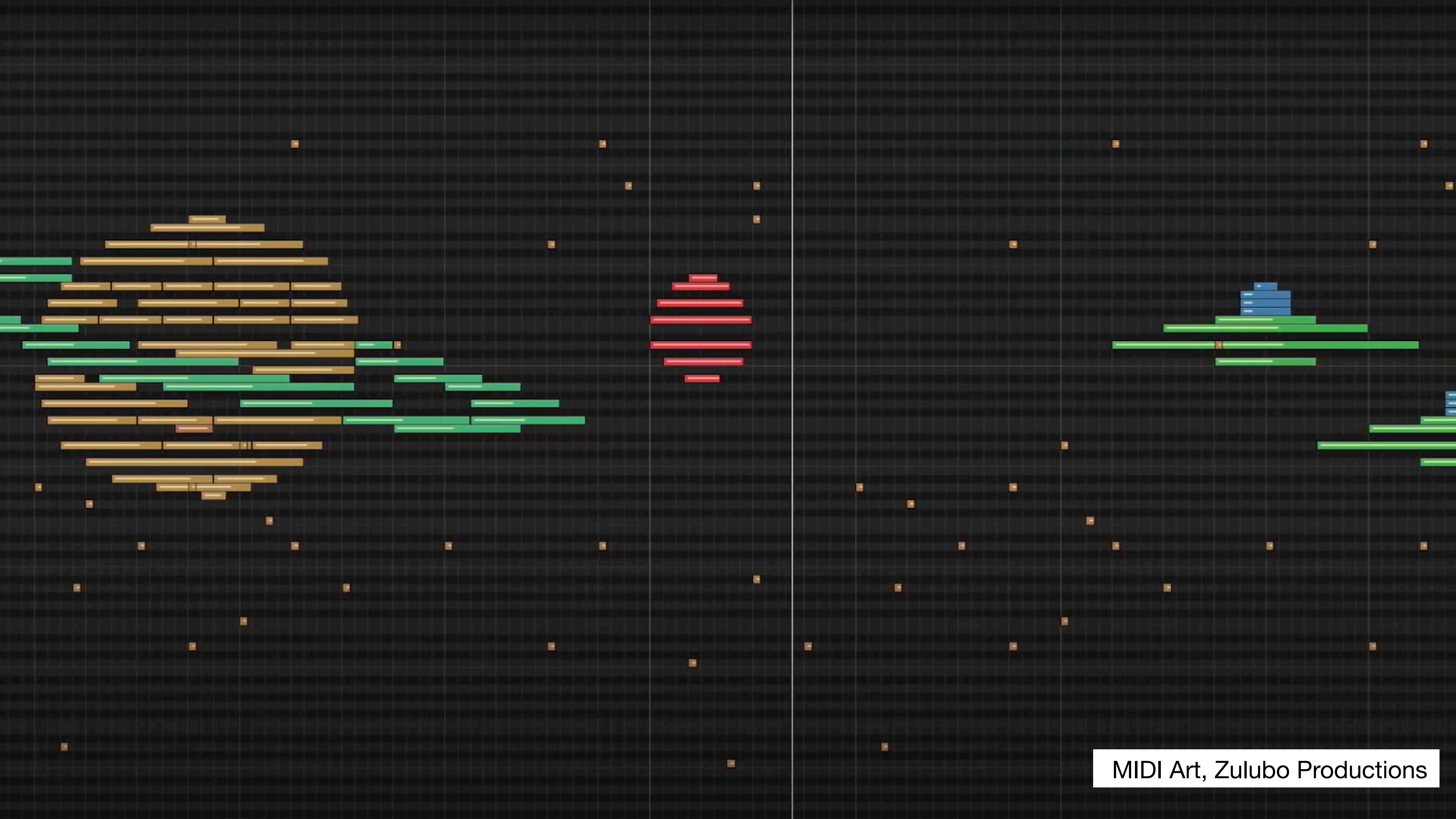
From Fluxus to MIDI Art

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

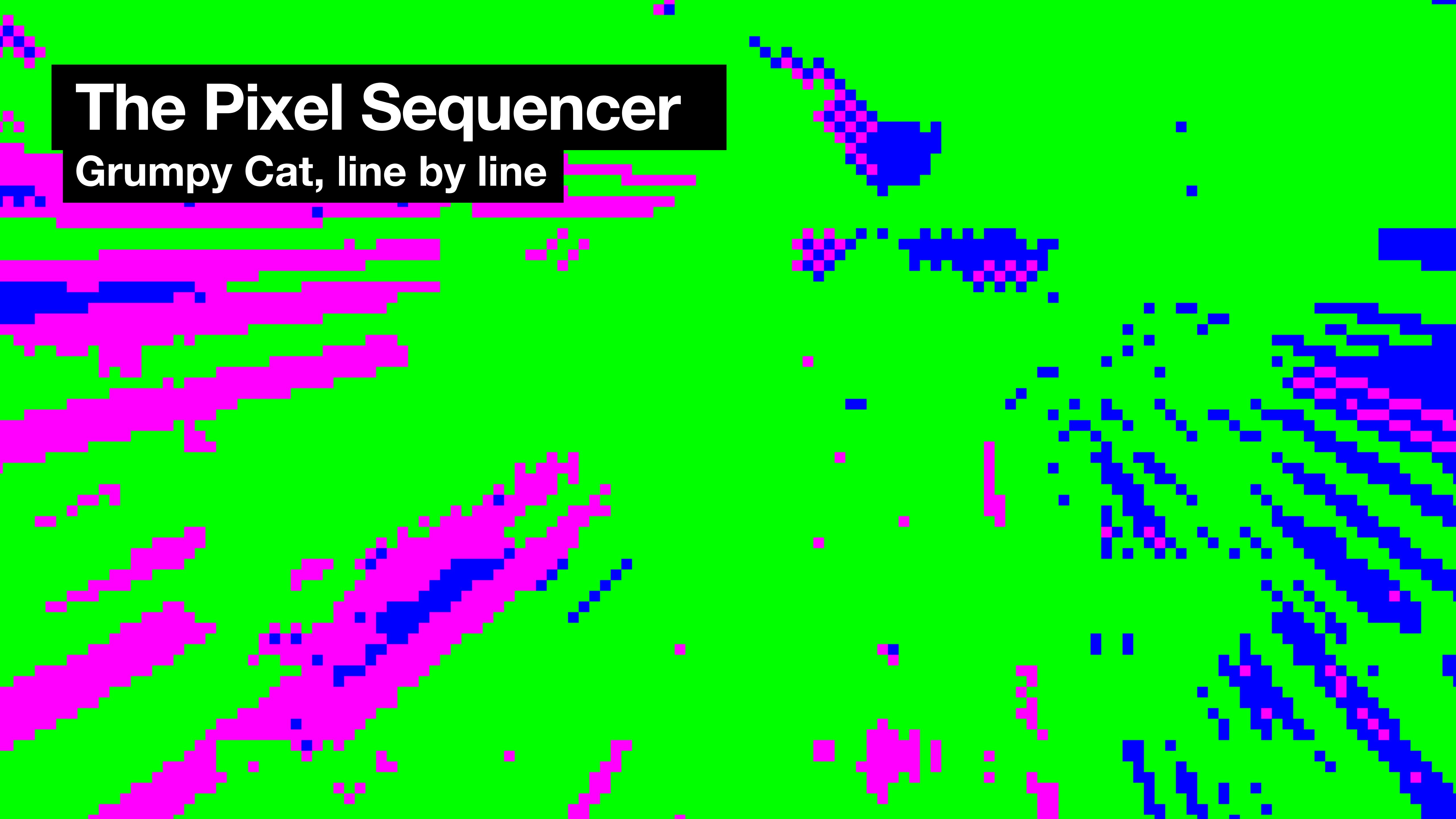
Pillars of Creation Sonification

- NASA-collaboration
- Translating the universe into sounds



The Pixel Sequencer

Grumpy Cat, line by line



The Pixel Sequencer

Grumpy Cat, line by line

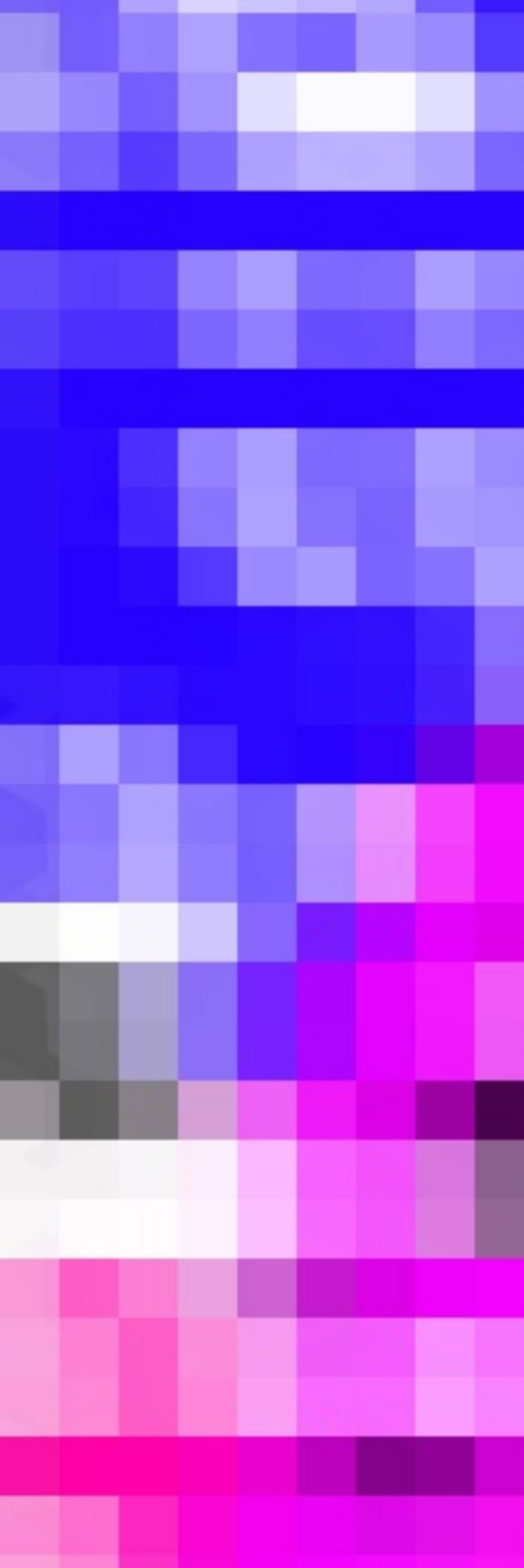
We all love cats, don't we?

The Pixel Sequencer

Grumpy Cat, line by line

We all love cats, don't we?

Even the grumpy ones ...





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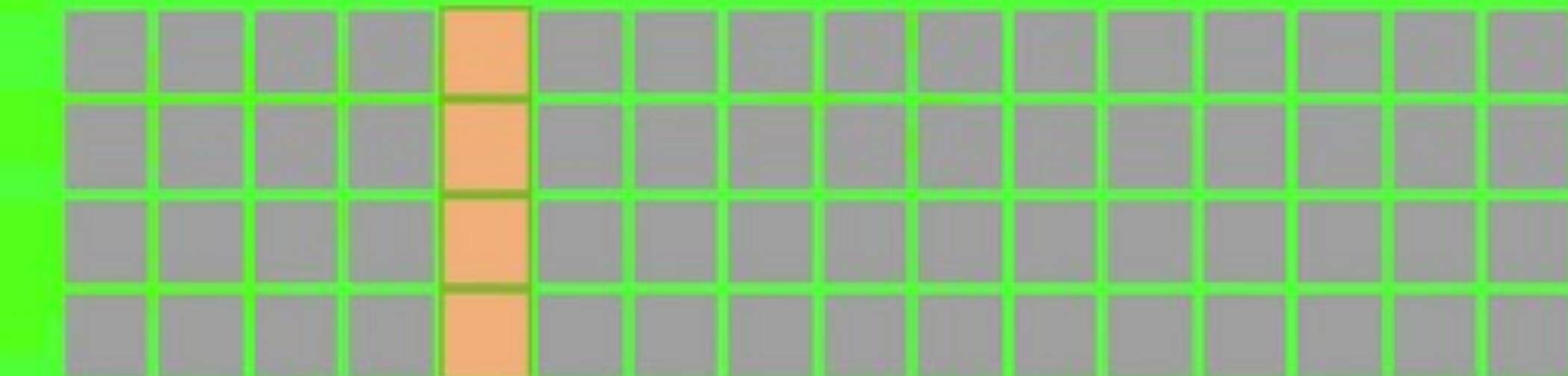
Tempo

120 bpm

— ●

Main Volume

● 0.1



The Pixel Sequencer

About

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

The Pixel Sequencer

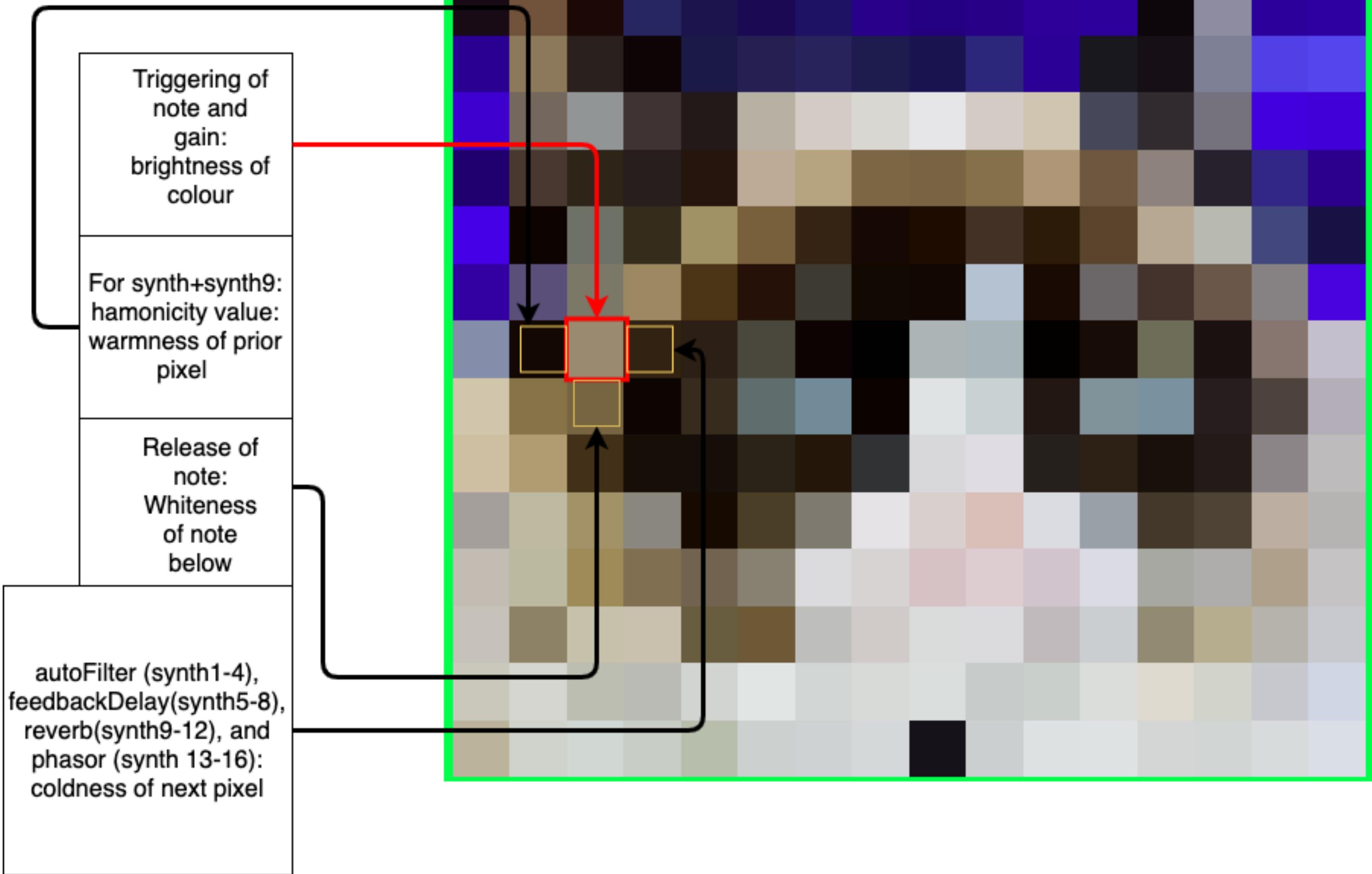
Format

- 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?

- X-axis: time
- Y-axis: MIDI note values



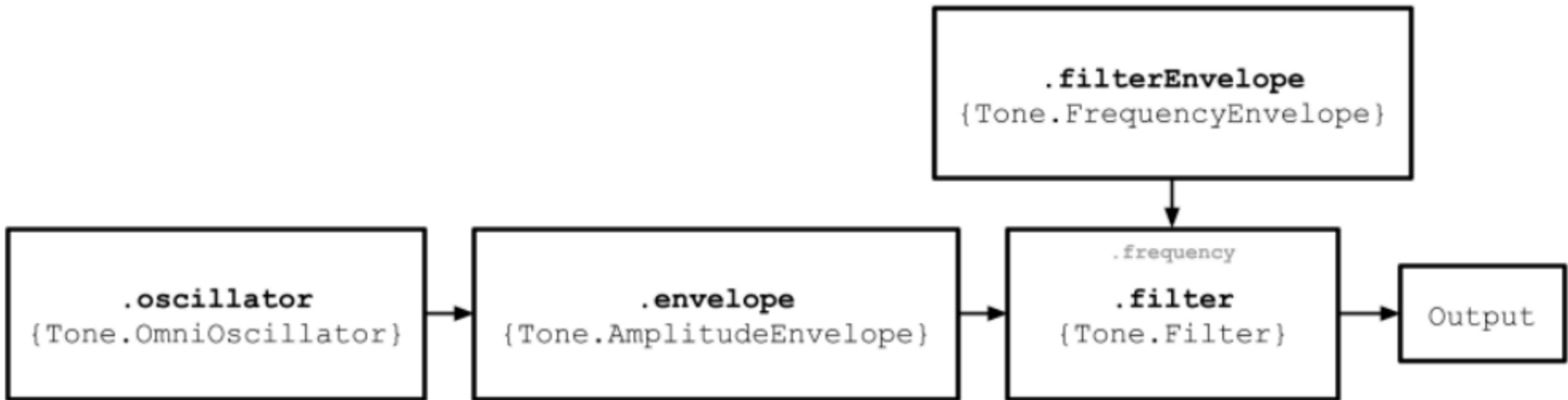
Tone.js

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();
```

Setting up effects in Tone.js

- Pre-built effects
- No need to trigger
- Start & run until terminated

```
const reverb = new Tone.Reverb({  
    decay: 1,  
    preDelay: 0.02,  
    wet: 0.5  
}).connect(gainNode);
```

```
const phaser = new Tone.Phaser({  
    frequency: 15,  
    octaves: 5,  
    baseFrequency: 1000  
}).toDestination();  
const synth = new Tone.FMSynth().connect(phaser);
```



THX ...

