

THE WEB, AN UBIQUITOUS SOLUTION FOR REAL-TIME MUSIC AND TEACHING ?

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CIEREC-EA3068

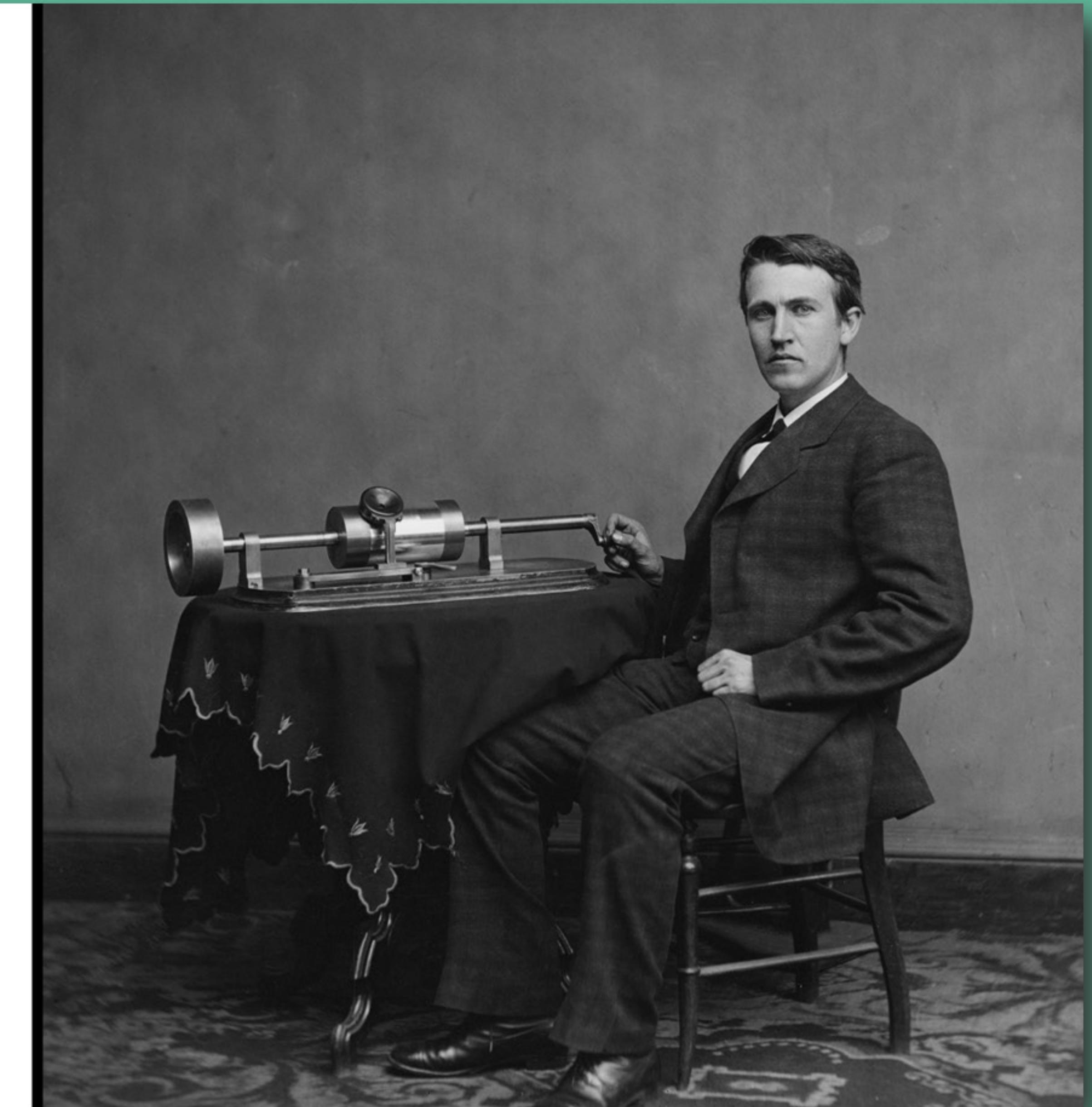


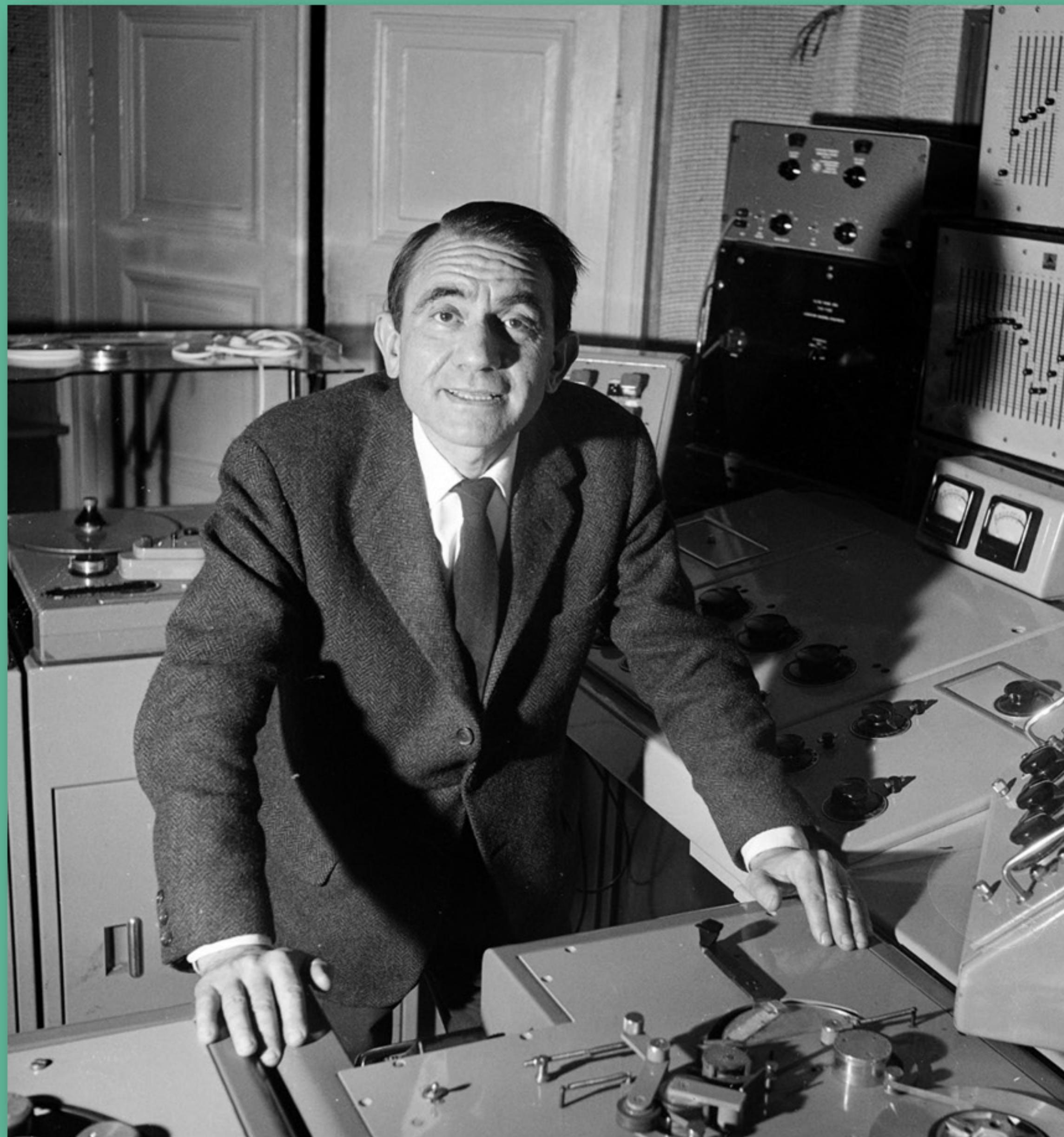
With the support of the Rhônes-Alpes region

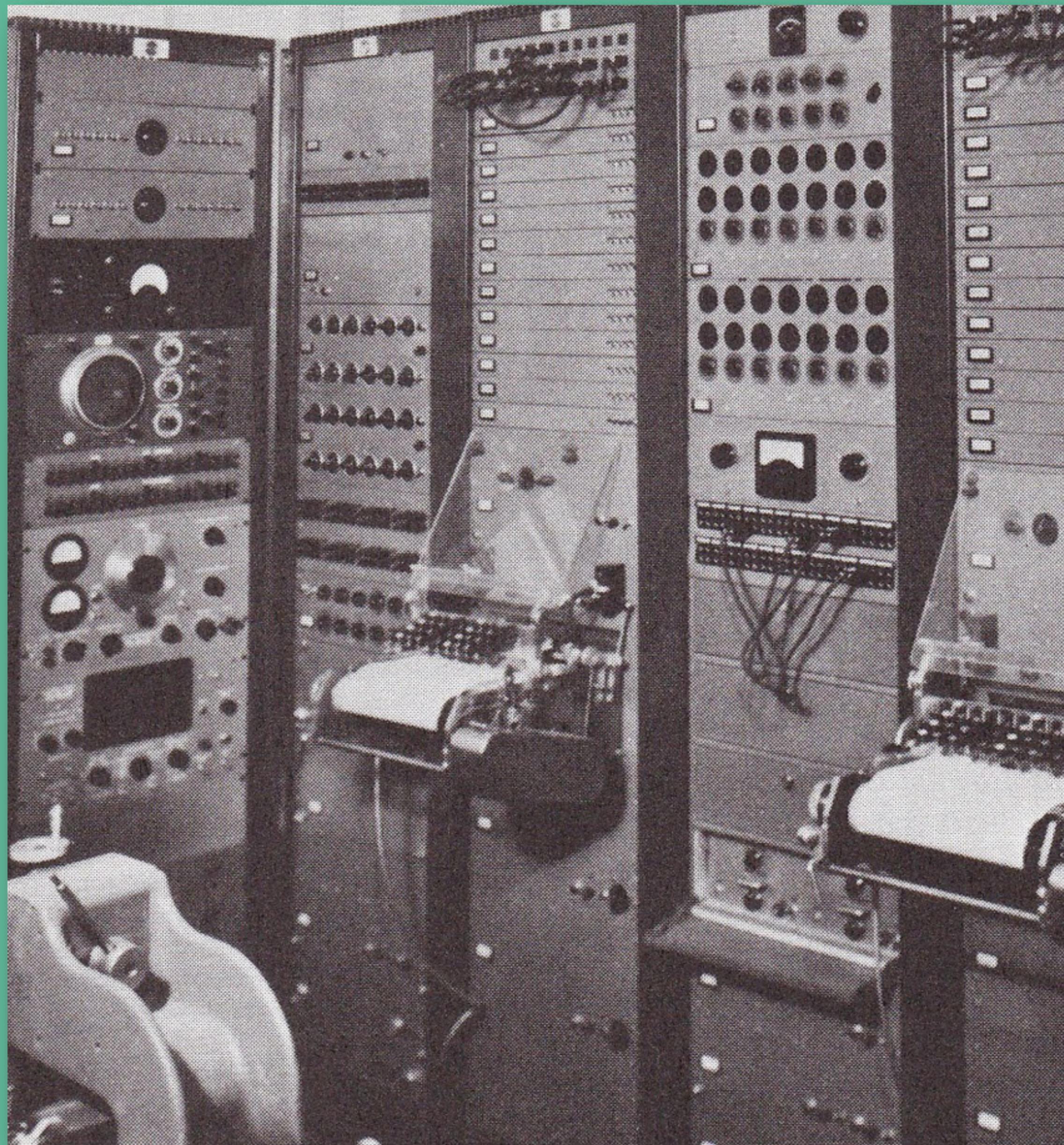
OVERVIEW

- 1. Academic and non-academic music**
- 2. Non-academic learning**
- 3. Music applications on the Web**

ACADEMIC AND NON-ACADEMIC MUSIC









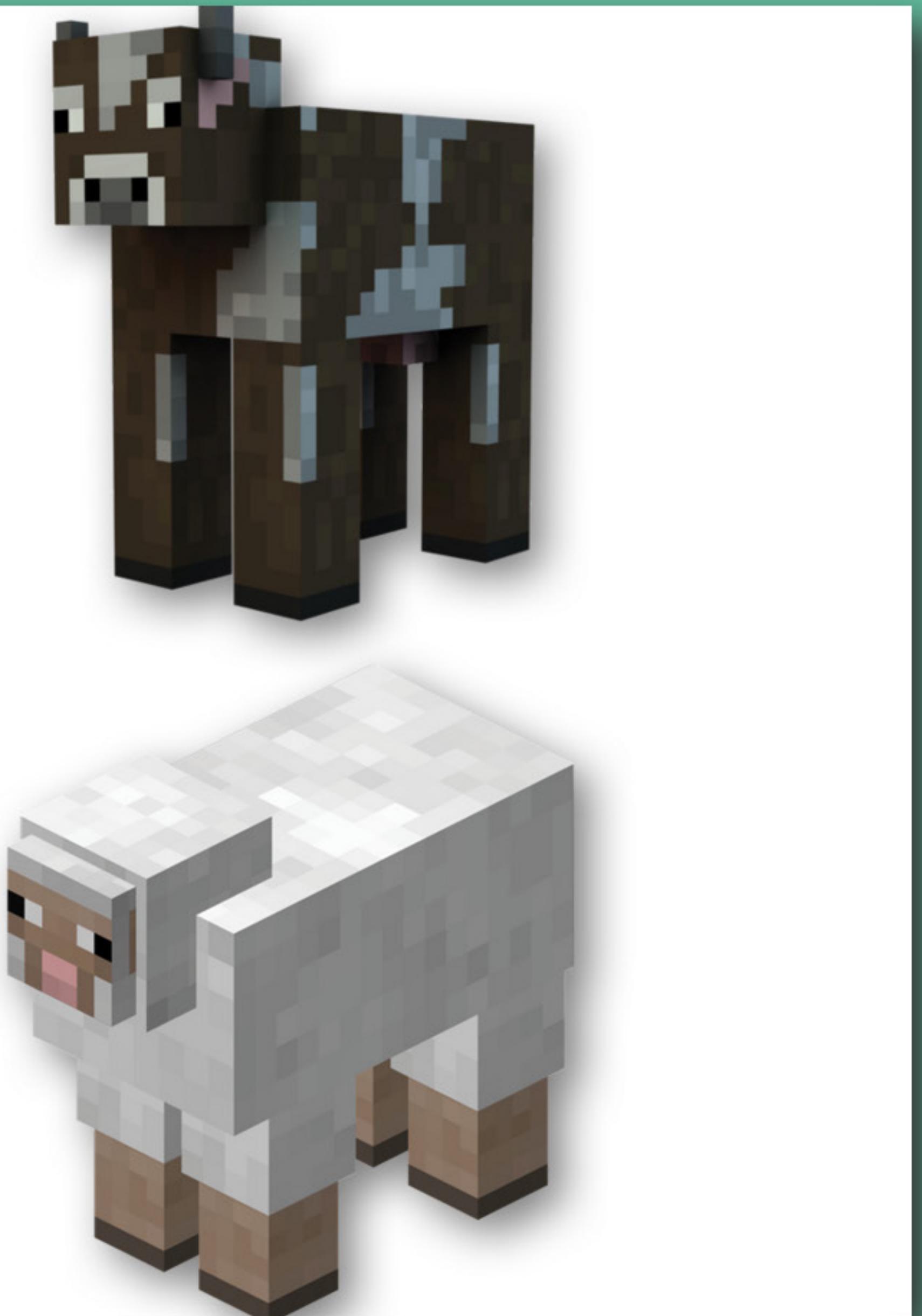
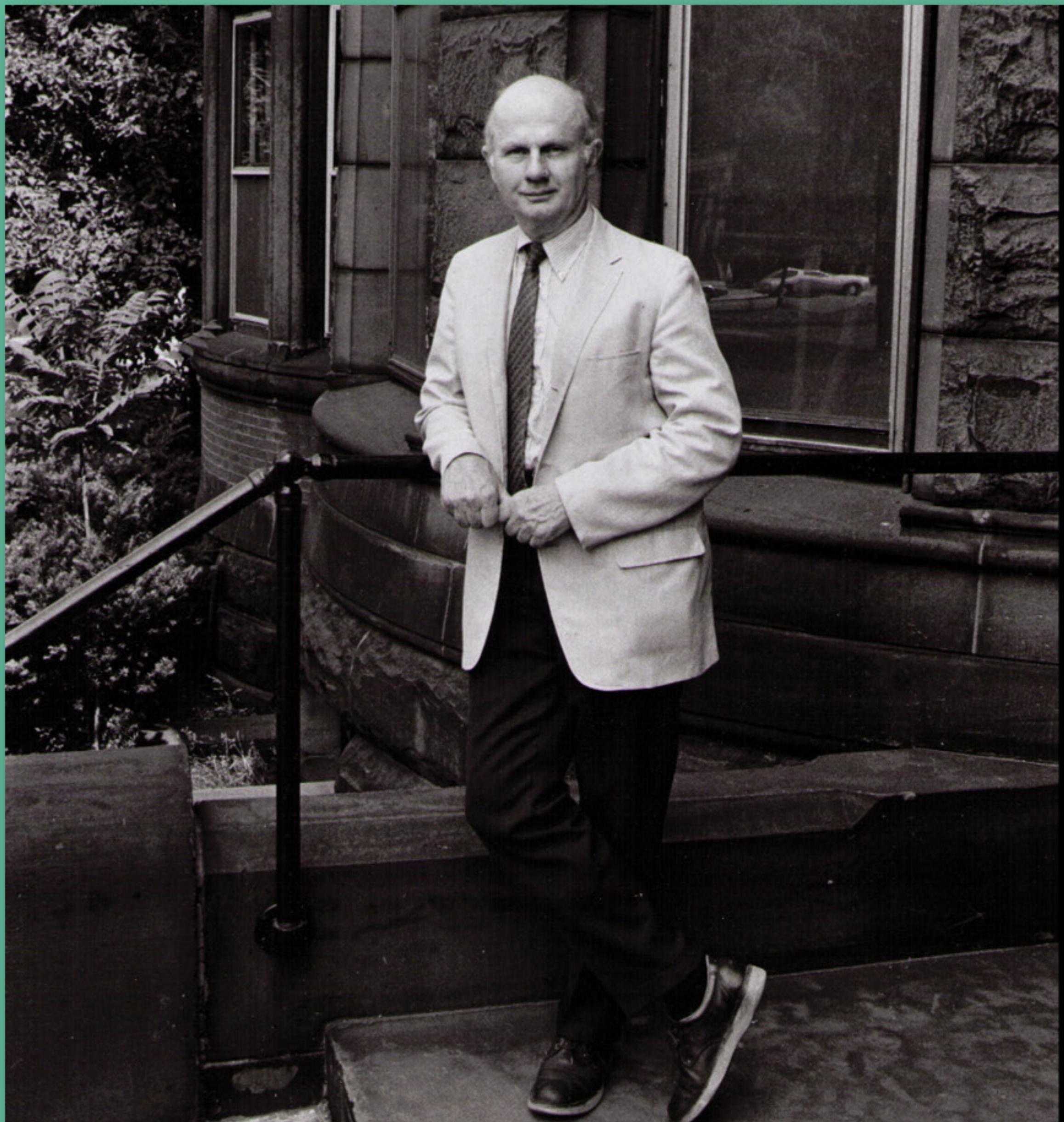


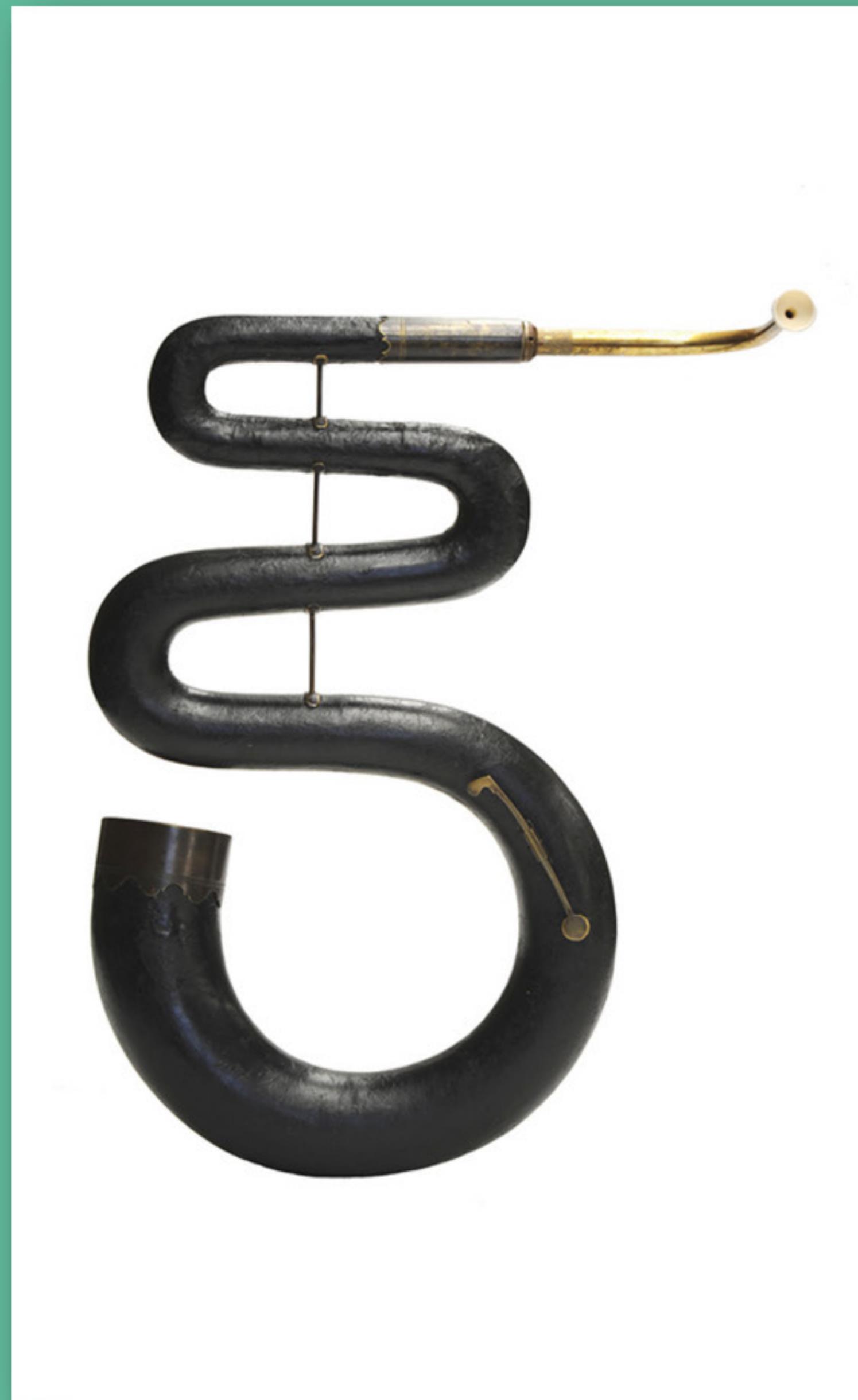




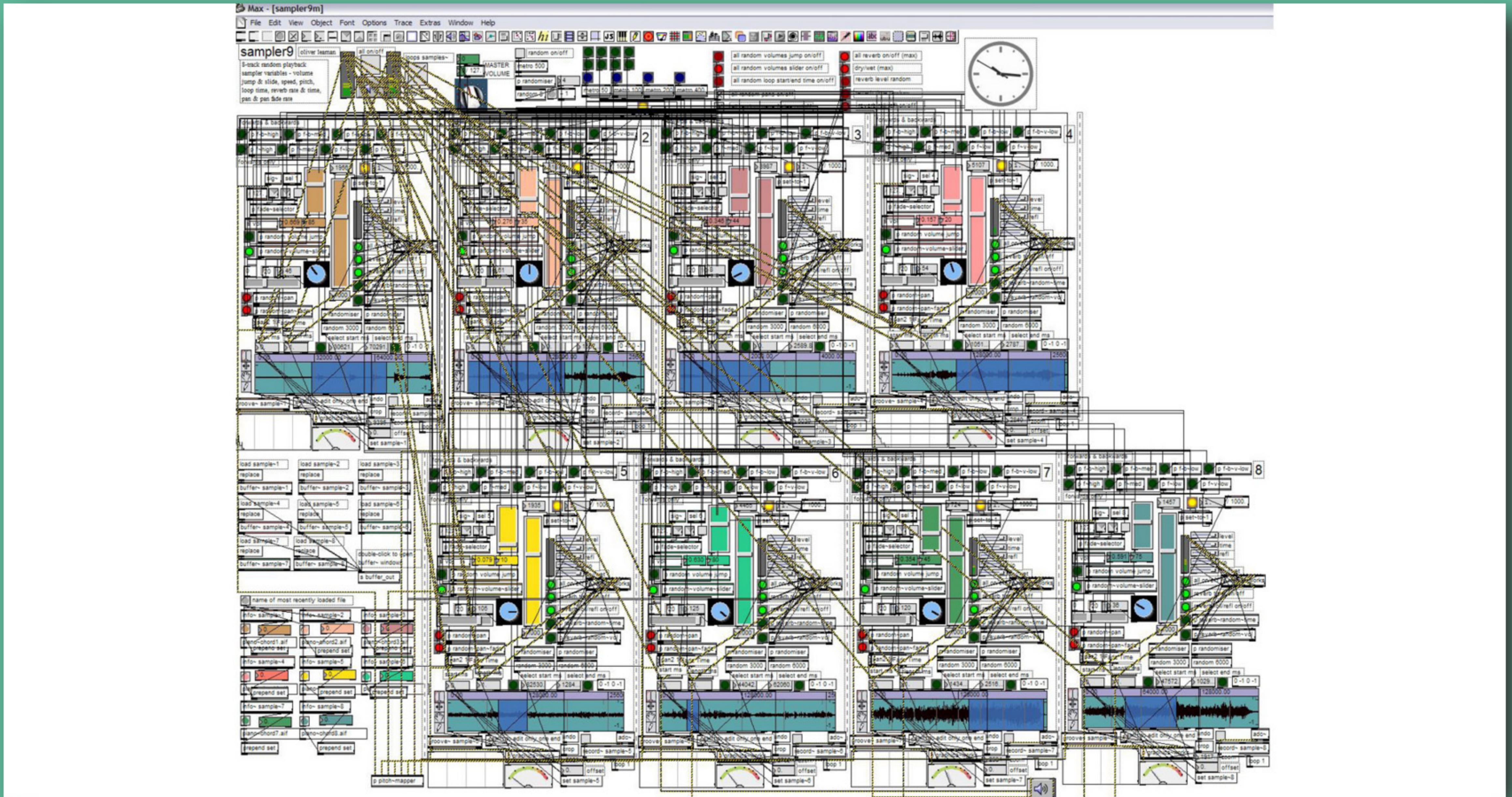
NON-ACADEMIC LEARNING

"Civilization is a race between education and catastrophe" H.G. Wells









NATIVE ACADEMIC APPS CURRENT LIMITS

- Technical gap is too big to abstract and experiment
- Requires knowledge, skills and interest in computers
- Quickly perishable closed-source softwares
- Generational schooling artefacts (learner behaviour and app design)

MUSIC ON THE WEB

Hello World

- [Home](#)
- [About Us](#)
- [Contact Us](#)
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Hello World Title!

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Latest News

- **February 27th - Dolor sit amet**

[In et urna ac lectus rhoncus accumsan...](#)

- **March 3rd - Lorem Ipsum**

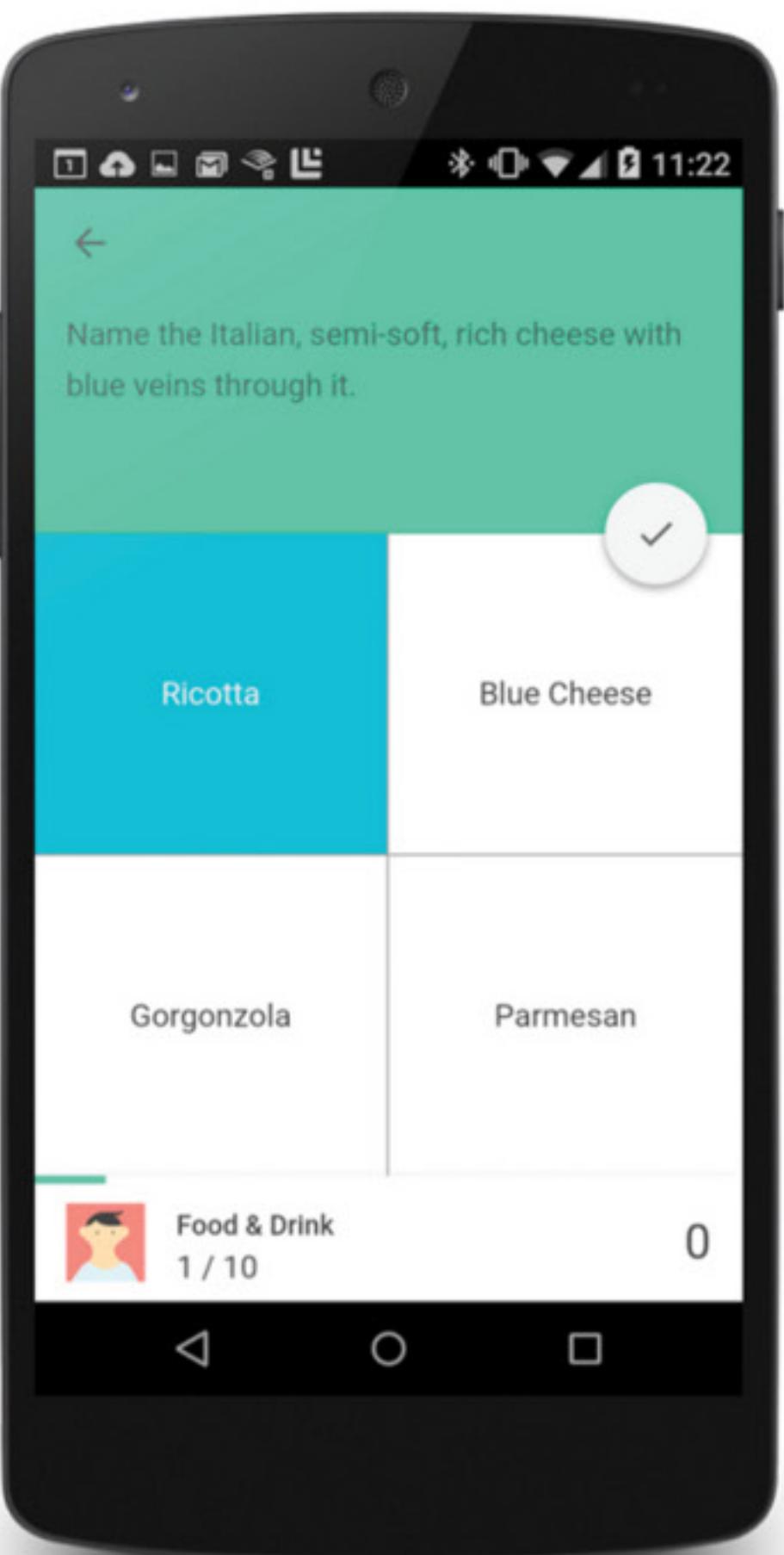
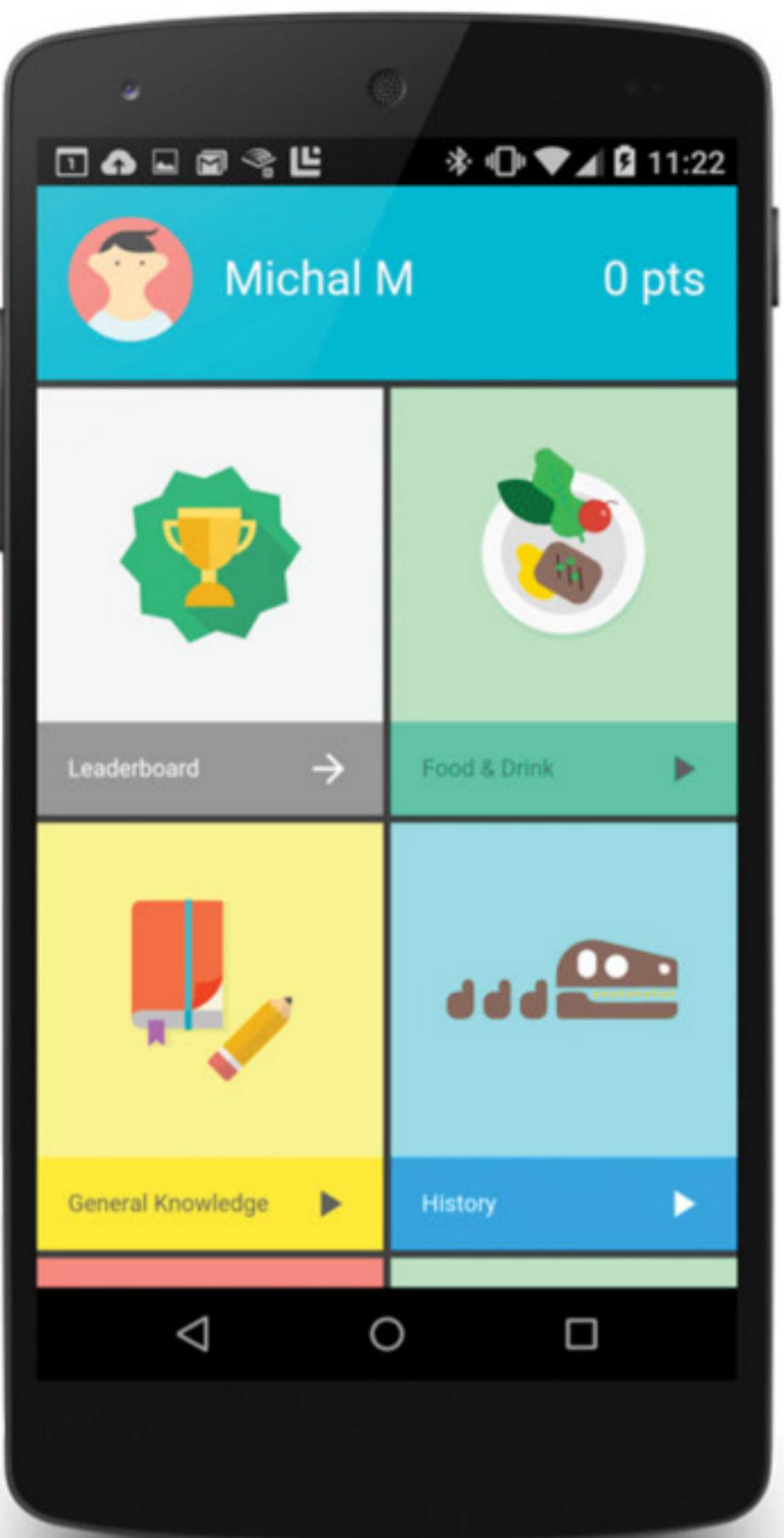
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- **July 7th - Gami Suscipit**

[Quisque iaculis nisi tortor. Praesent quis tortor est. Integer eleifend iaculis magna...](#)

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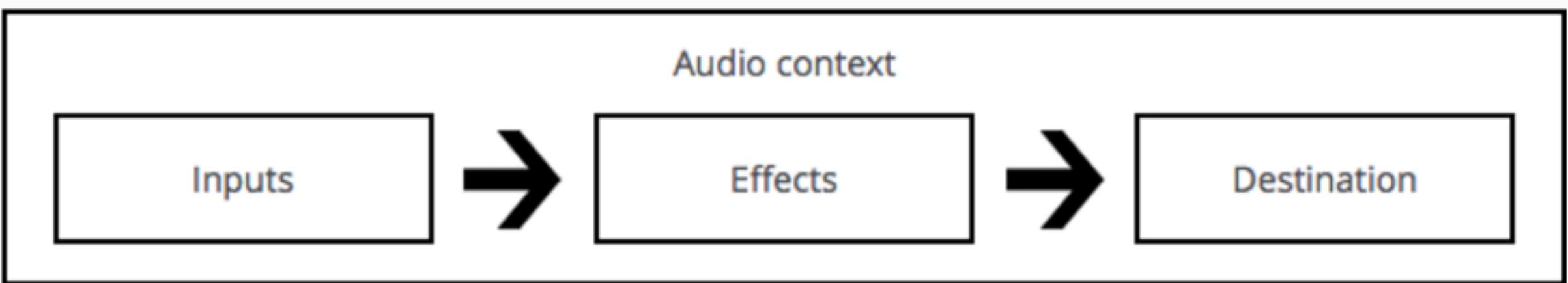


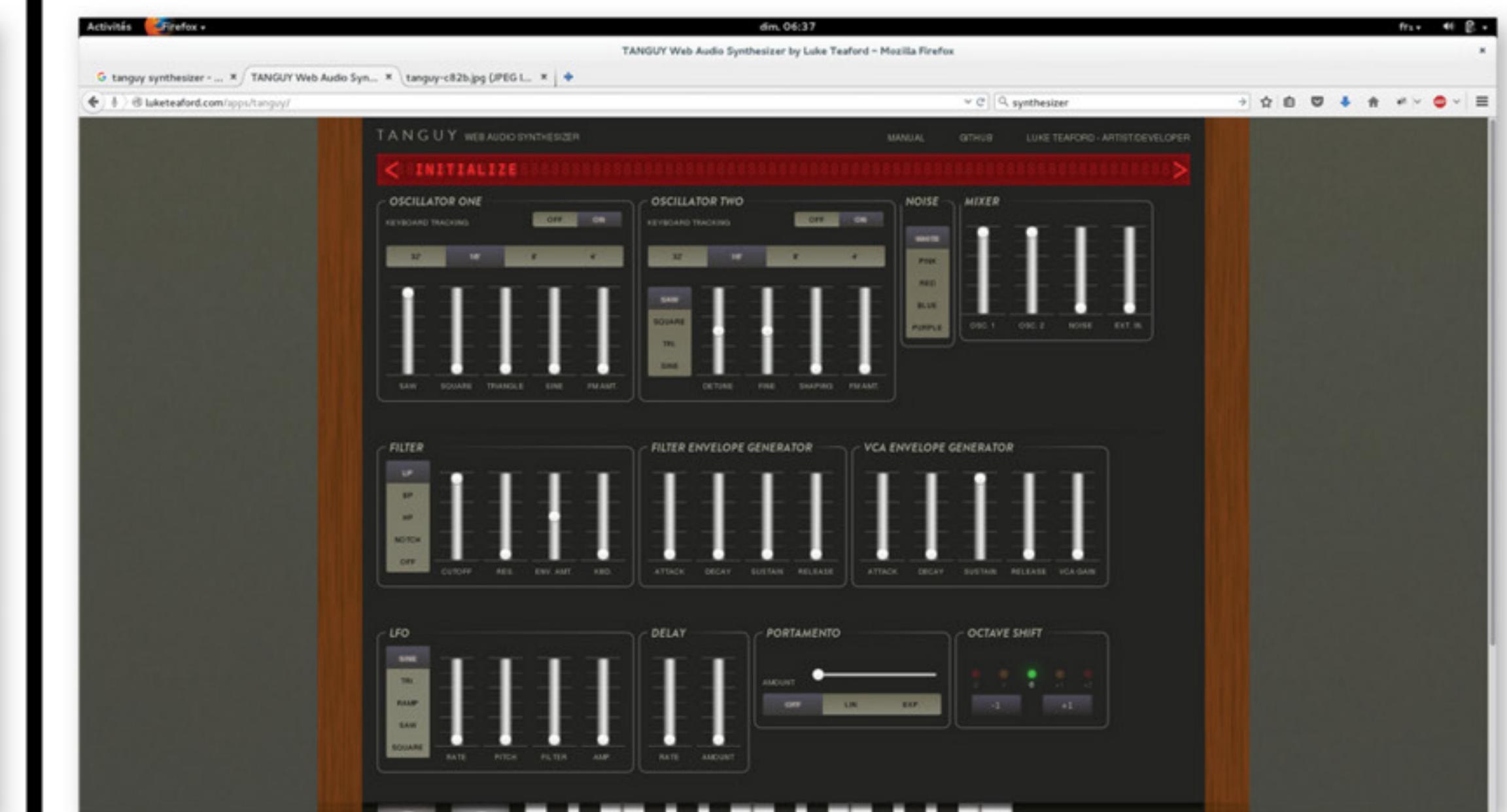
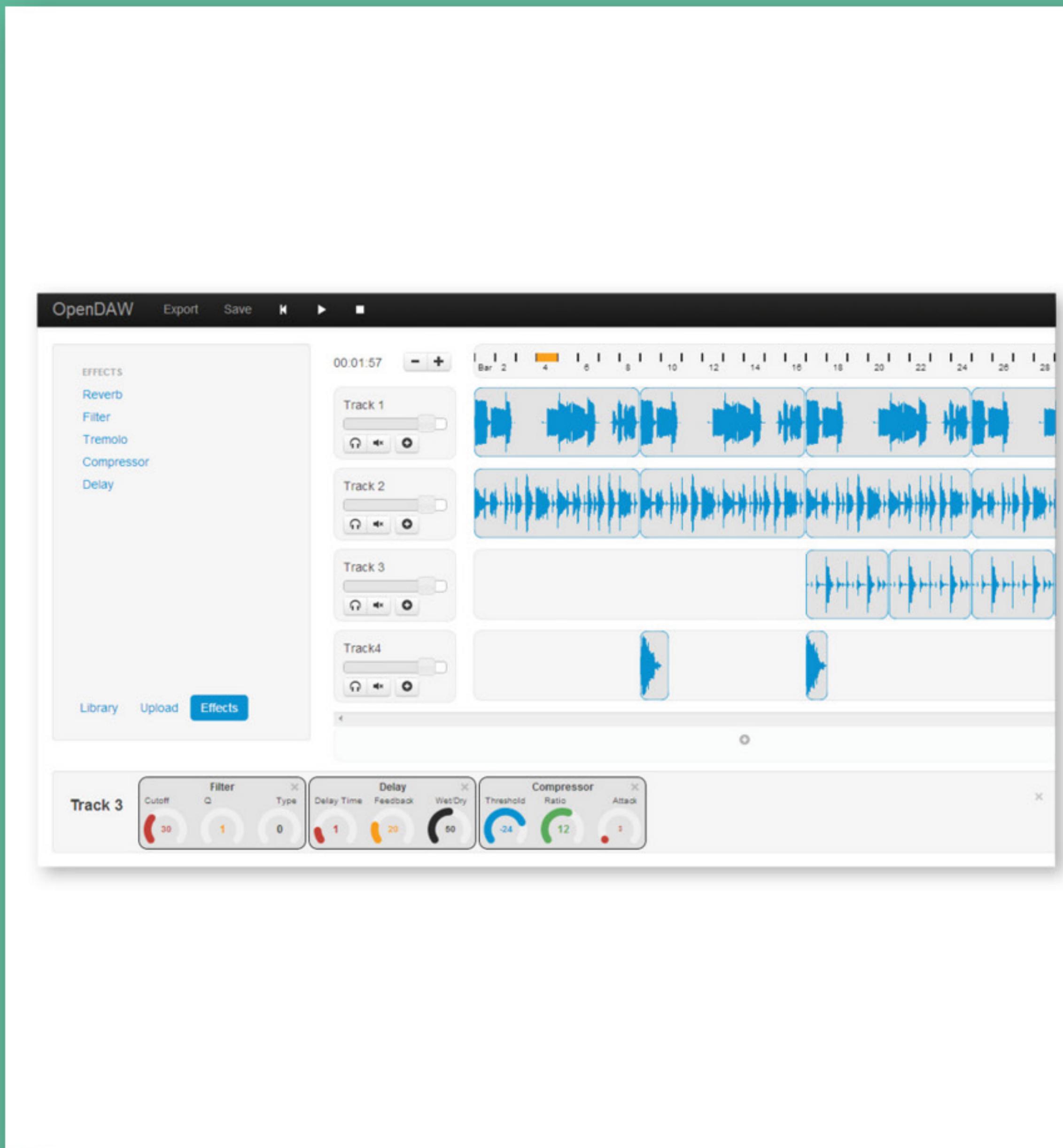
WEBAUDIOAPI



Modular routing : audio nodes

- Context
- Source
- DSP
- Destination





FAUST COMPILER

C/C++ TO ASM.JS TOOLCHAIN

- clang to llvm, emscripten, asm.js (*external functions, vectorial*)
- libfaust (library version of compiler) to asm.js (*ease of use*)
- polyphony (asm.js mixer)

COMPILING

- *faust2webaudioasm* : operational HTML-SVG interface
- *faust2asmjs* : asm.js DSP only

SIMPLE FAUST DSP EXAMPLE : NOISE.DSP

```
process = library("music.lib").noise * hslider("gain",0,0,1,0.001) <:_  
, -;
```

COMPIILING IN A TERMINAL

```
faust2asmjs noise.dsp
```

JAVASCRIPT

```
var noiseGain = document.getElementById('noiseGain');  
var ctx = new (AudioContext || webkitAudioContext());  
var noiseDSP = faust.noise(ctx,512);  
noiseDSP.connect(ctx.destination);  
noiseGain.addEventListener('click', function()  
{noiseDSP.setValue('/0x00/gain',noiseGain.value)});
```



WEB-HARPSICHORD

WEB AUDIO APPS CURRENT LIMITS

- **Web Audio API**
 - **Scheduling**
 - **Denormalisation**
- **Browsers implementations**
 - **Web Audio API - Web MIDI API - asm.js**
 - **Web Components**
 - **Polyfills**

PERSPECTIVES

- Framework evolutions
 - **AudioWorker node**
 - **WebAssembly**
- Projects
 - **UbiMus**
 - **Faust-Playground**
 - **EarSketch**
 - **Musicoll**

PERSONNAL THANKS

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