



WELCOME TO INTERAKTIV MUSIKK

Spring 2022

Interactive Music

SYLLABUS

INSTRUCTORS: Çağrı Erdem, Qichao Lan

TIME: Tuesday 09:15–10:00 and Friday 12:15–14:00

LOCATION: ZEB, Seminarrom 2

WEEKLY SCHEDULE

WEEK 1 Introduction: Microphones, tools, effects, and noise

WEEK 2 Analogue Synthesis 1: Main concepts and parameters

WEEK 3 Analogue Synthesis 2: Sound sources and processors

WEEK 4 Collaborative performance and Live Coding

WEEK 5 Digital Synthesis 1: Introduction to Pure Data

WEEK 6 Digital Synthesis 2: Basics, oscillators, and filtering

WEEK 7 Digital Synthesis 3: Audio effects

WEEK 8 Digital Controllers 1: MIDI

WEEK 9 Digital Controllers 2: Sensors and mapping

WEEK 10 Ensemble 1: Composition and improvisation

WEEK 11 Ensemble 2: Final concert preparation

COURSE DESCRIPTION: This course provides students with knowledge and skills in designing, building, and performing with various musical instruments and interactive music systems. Students learn the basics of sound synthesis, gain hands-on experience on hardware synthesizers, digital controllers, and audio programming, explore new methods for musical expression and produce artistic works for electroacoustic music ensembles.

WEEK 2

Analog Synthesis part 1

a) A glimpse of history

WEEK 2

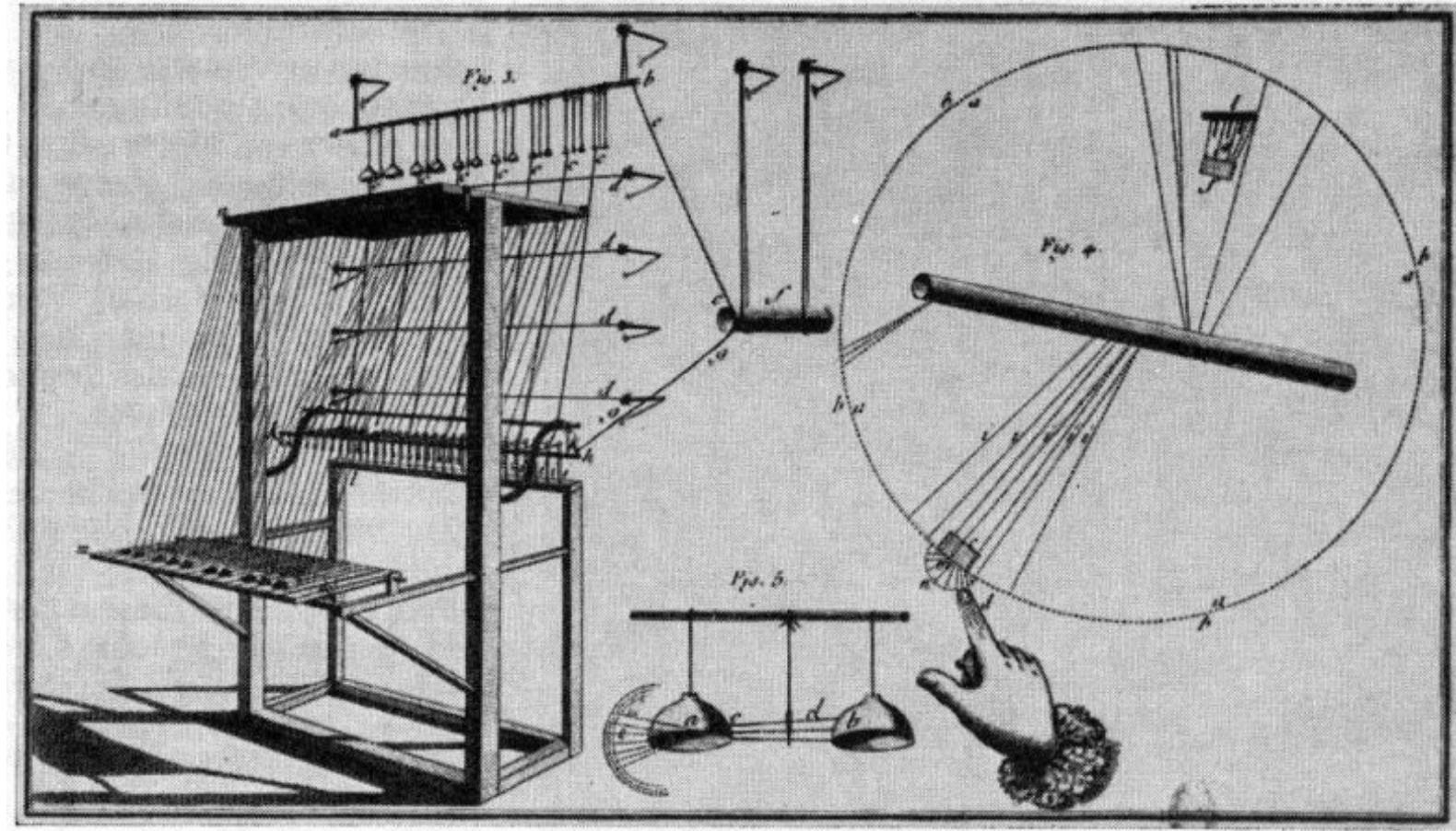
Denis d'Or (1748)



Václav Prokop Diviš (1698 – 1765)

WEEK 2

Clavecin Électrique (1759)



WEEK 2

Clavecin Électrique (1759)



WEEK 2

The Phonograph (1853)

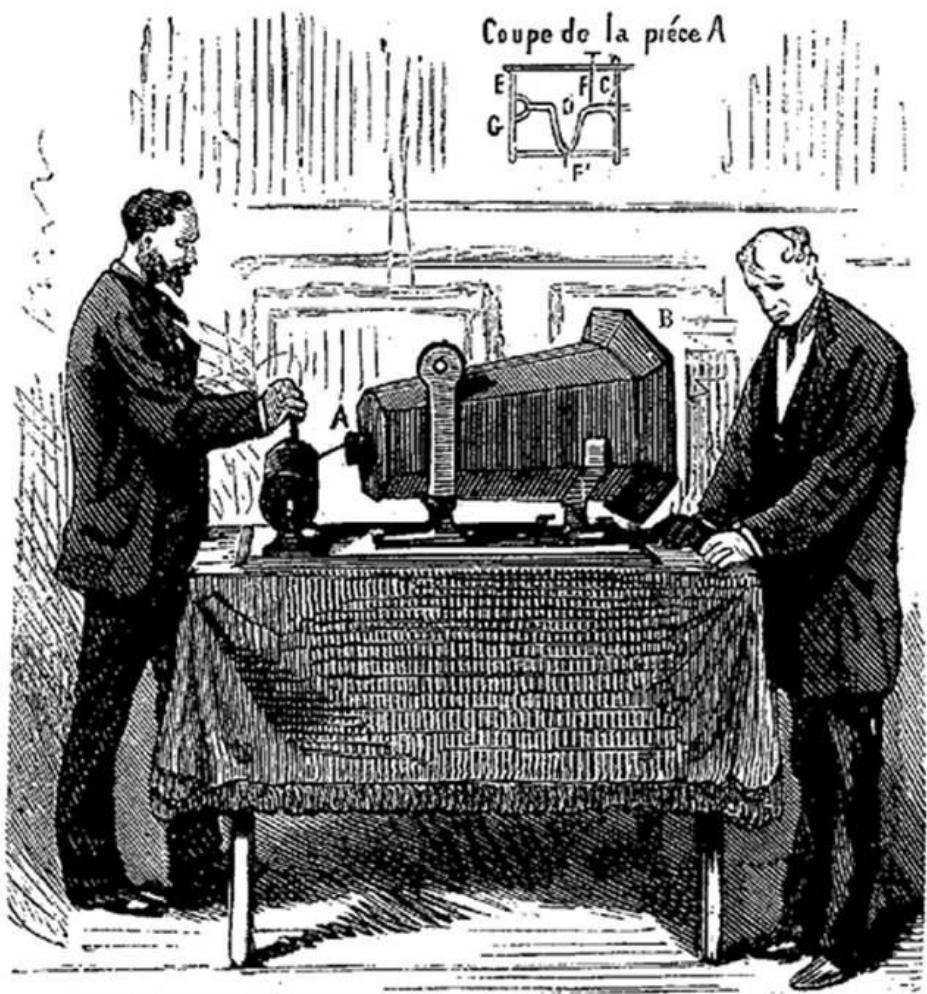
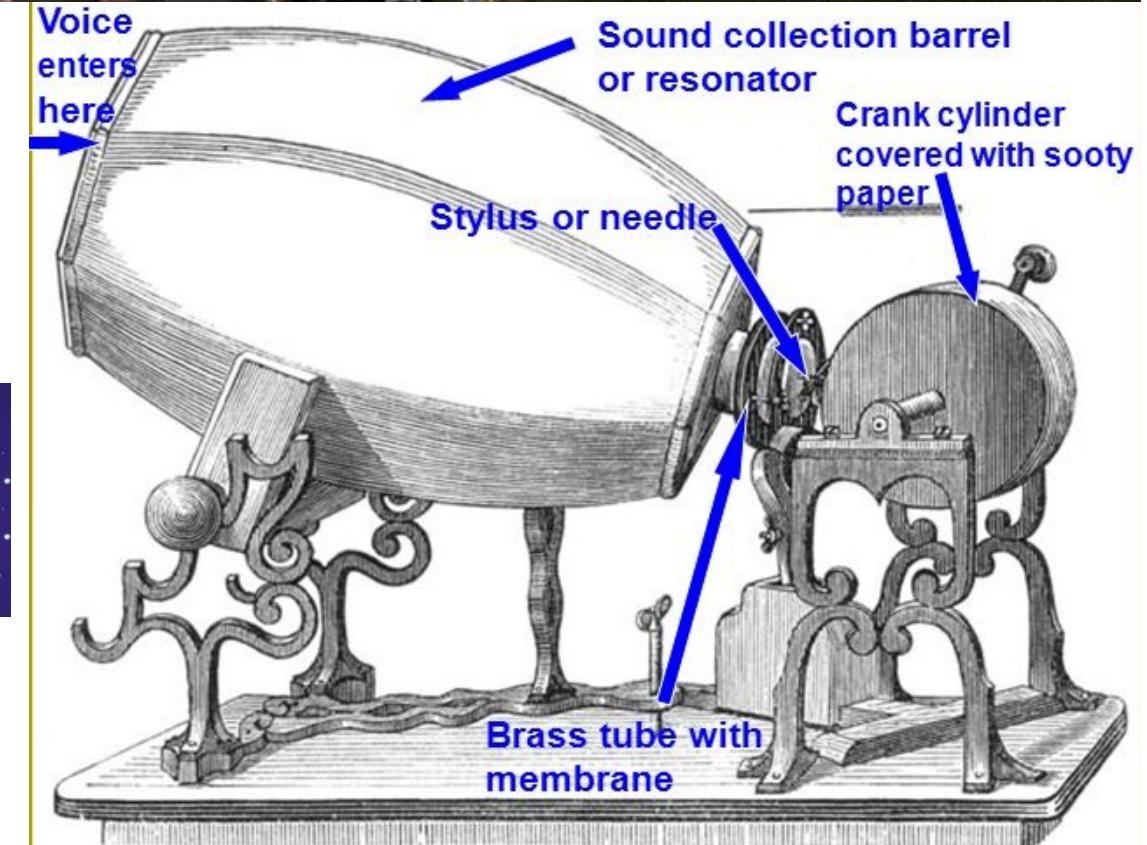
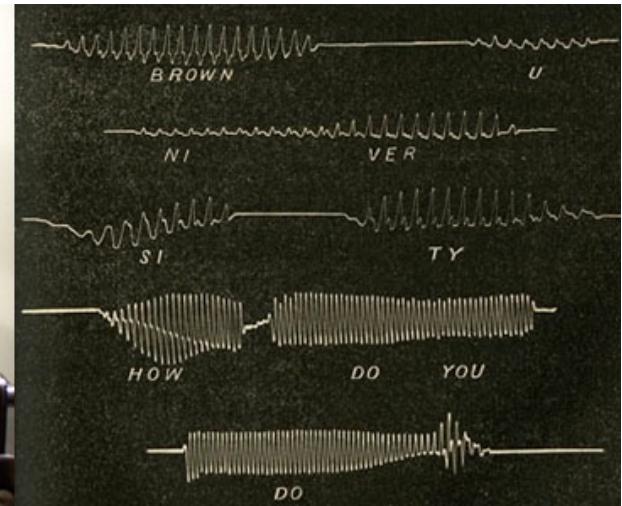
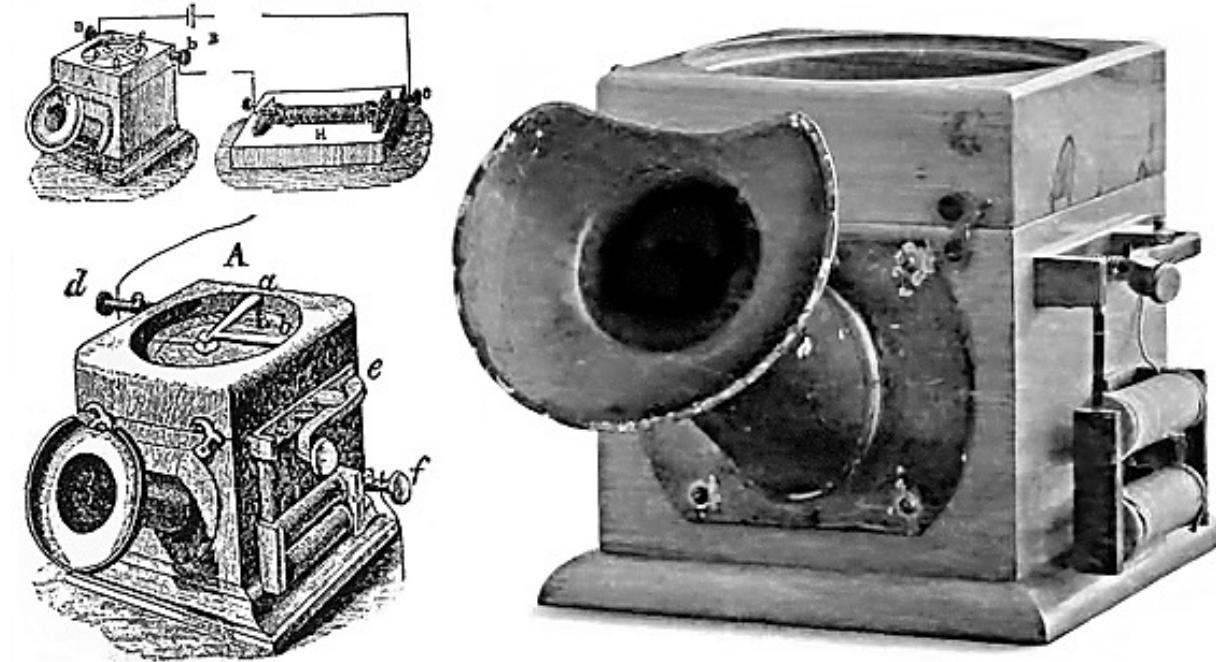


Fig. 466. — Le phonograph.



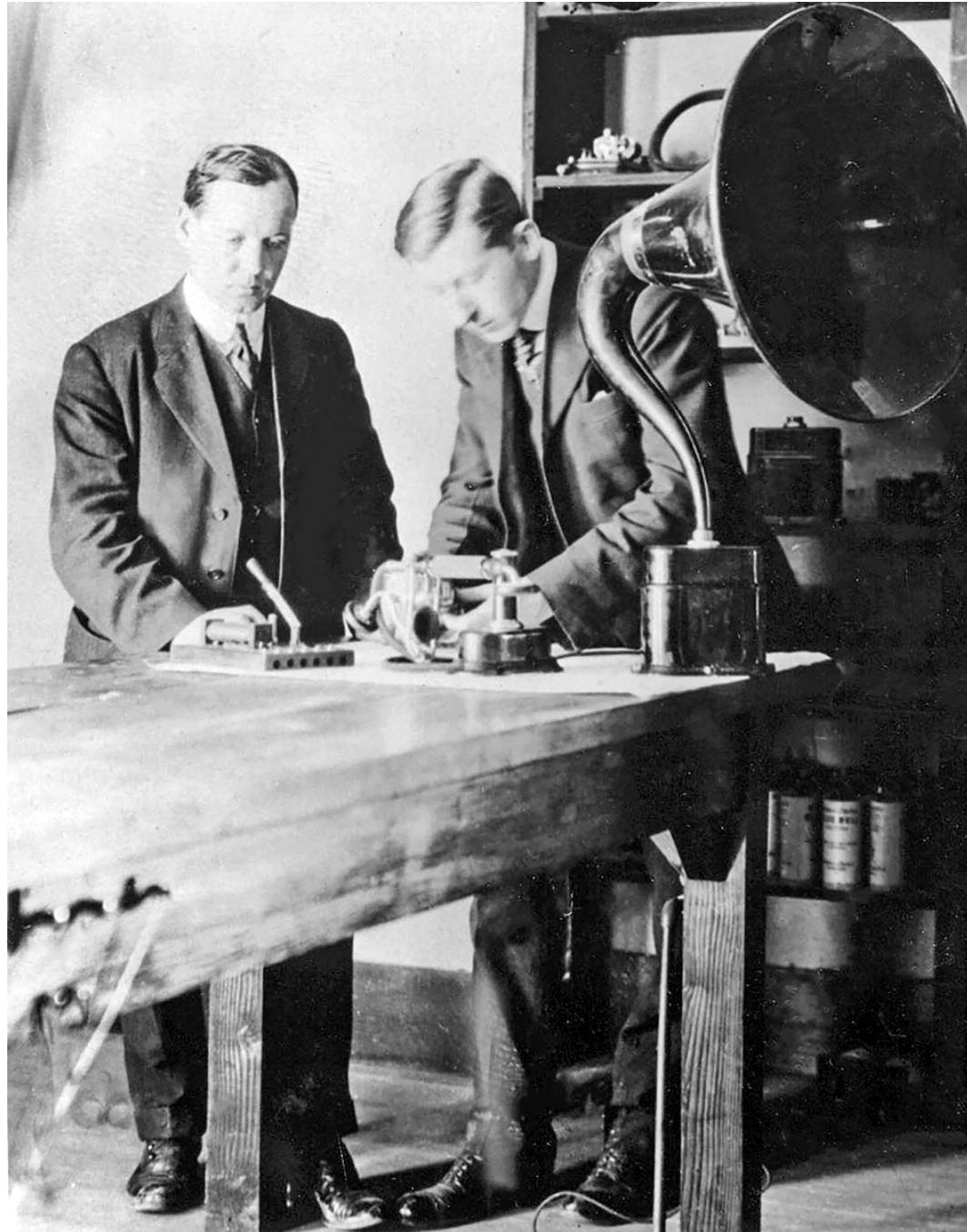
WEEK 2

Loudspeaker (1861)



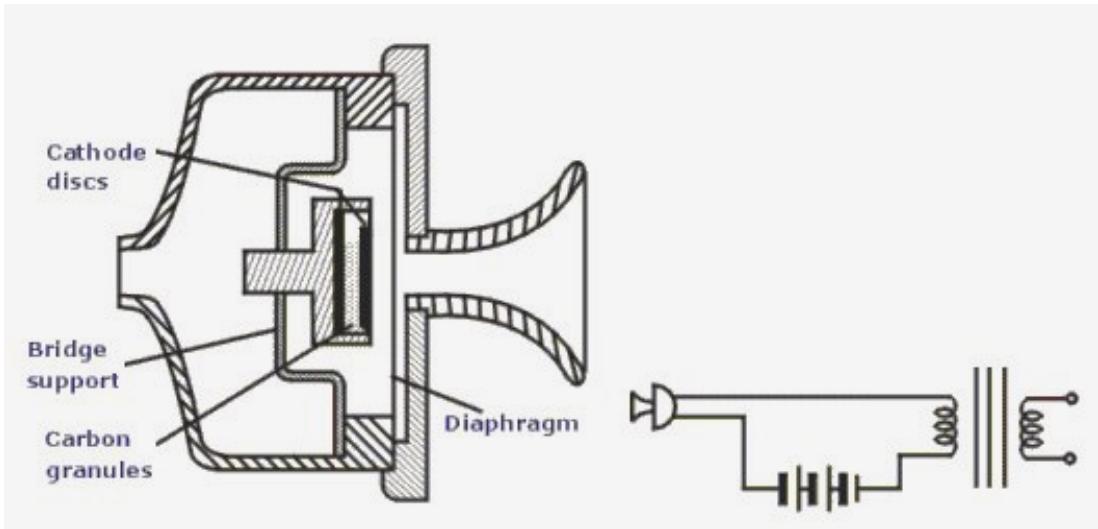
WEEK 2

Dynamic loudspeaker (1915)



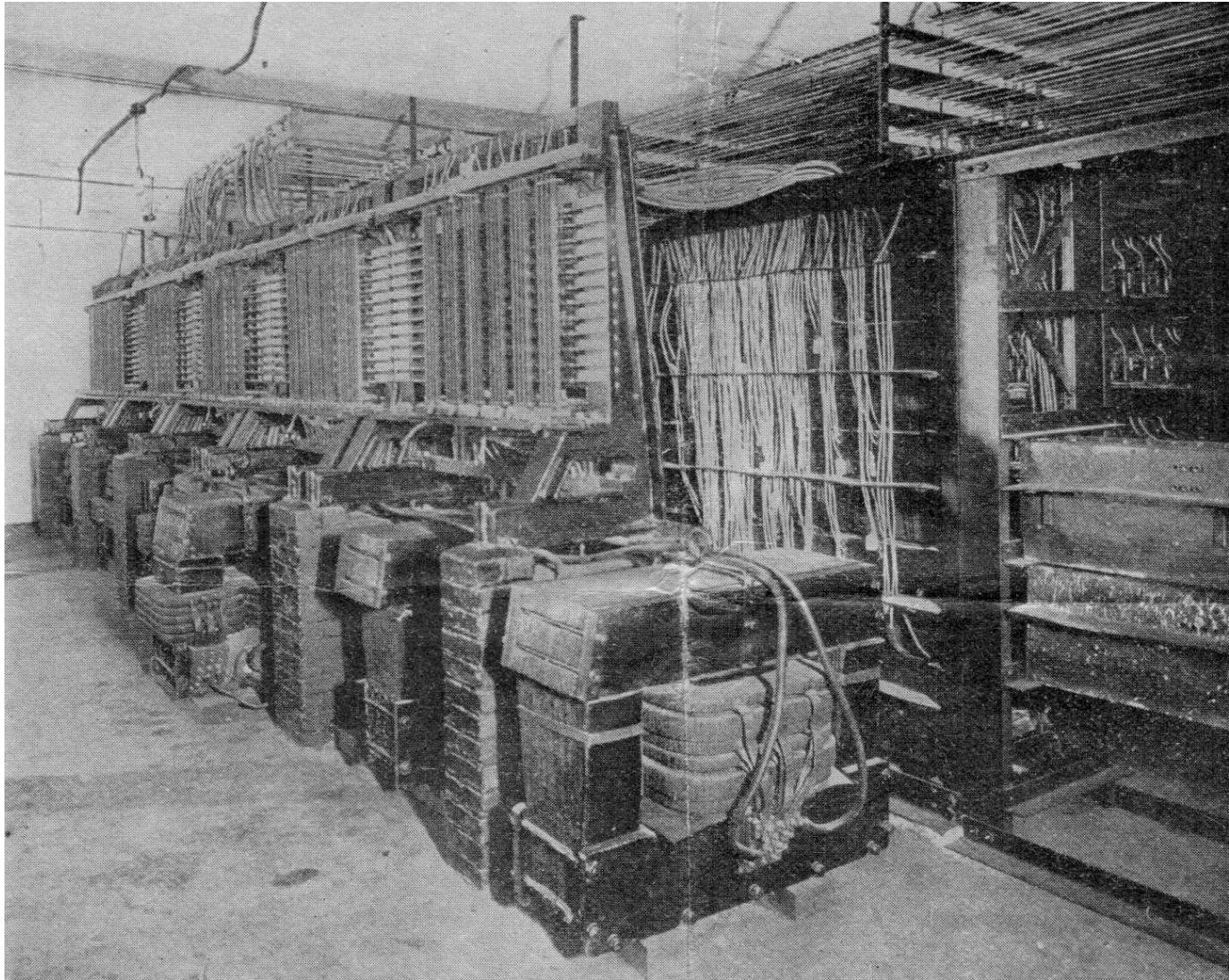
WEEK 2

Carbon microphone (1877)



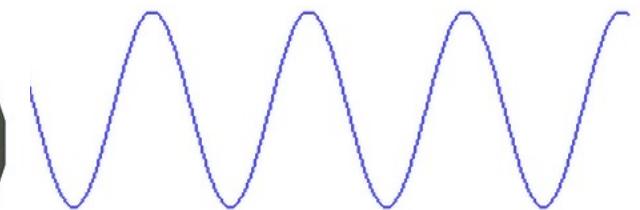
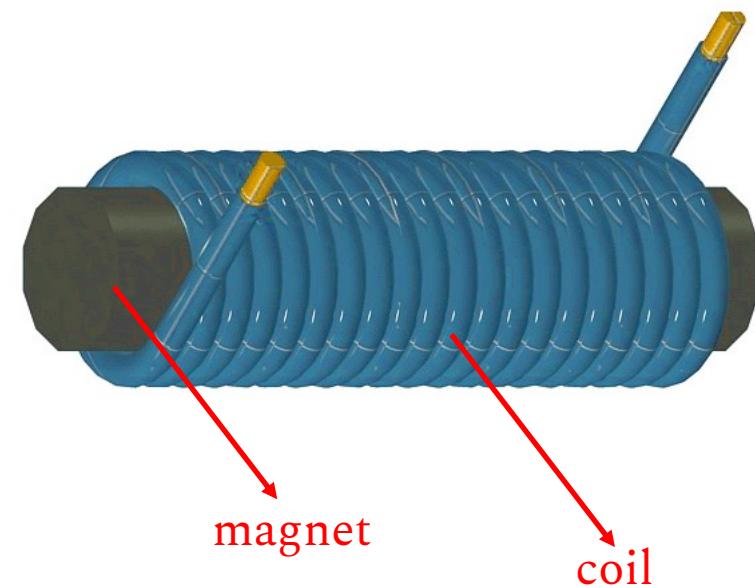
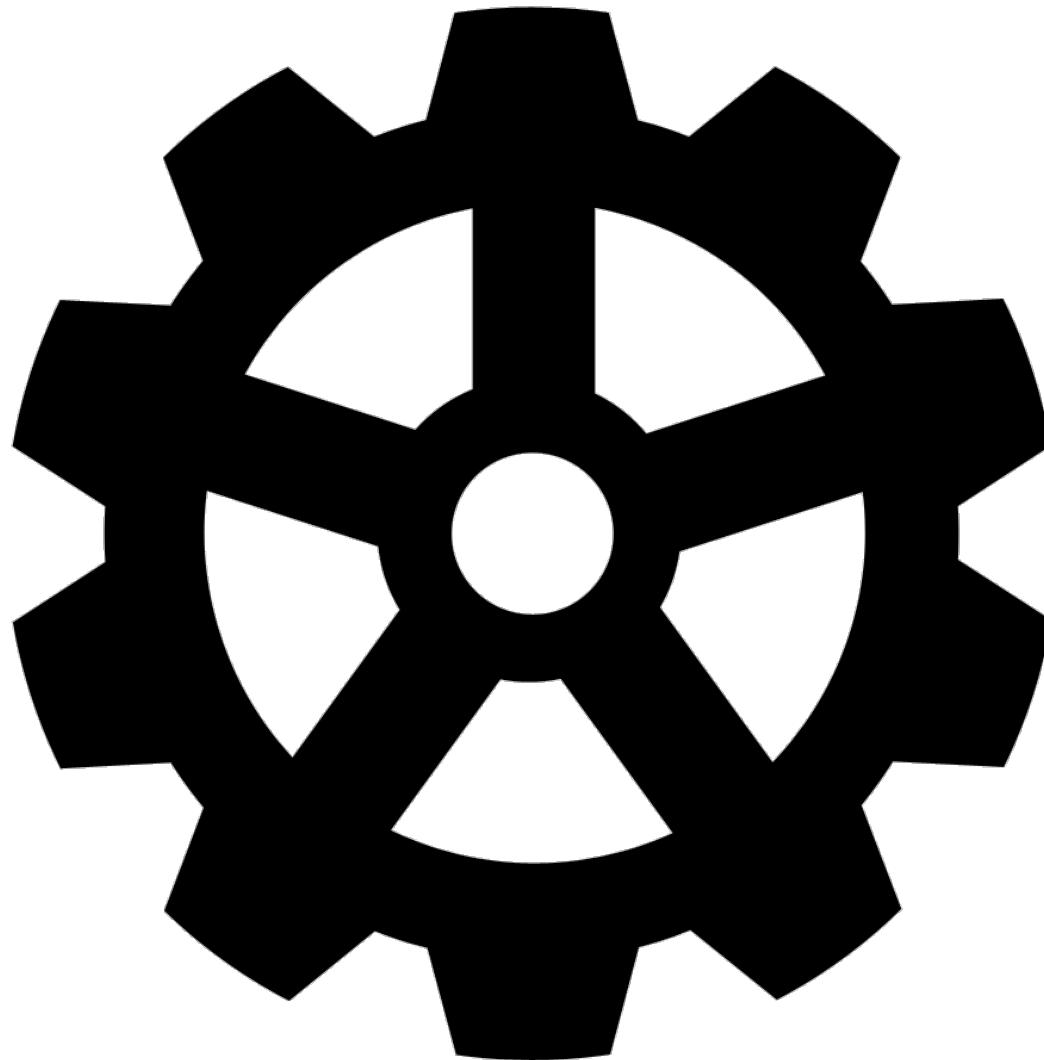
WEEK 2

Telharmonium(1897)



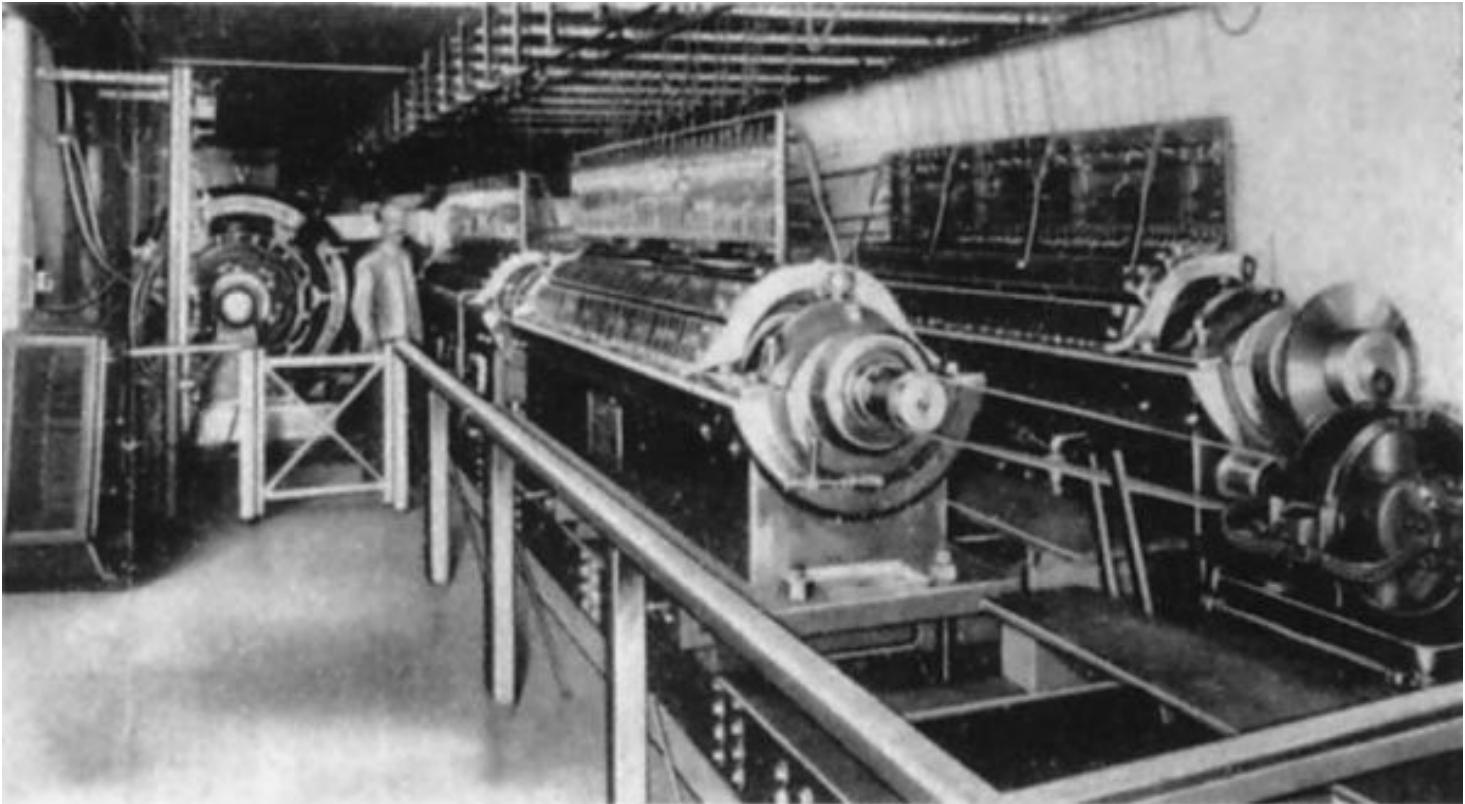
WEEK 2

Telharmonium(1897)



WEEK 2

Telharmonium(1897)



(No Model.)

10 Sheets—Sheet 4.

T. CAHILL.
ART OF AND APPARATUS FOR GENERATING AND DISTRIBUTING MUSIC
ELECTRICALLY.

No. 580,035.

Patented Apr. 6, 1897.

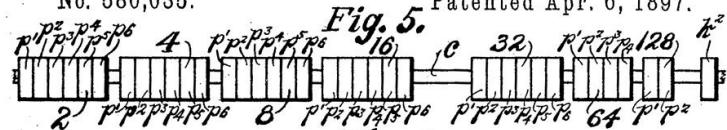


Fig. 6.

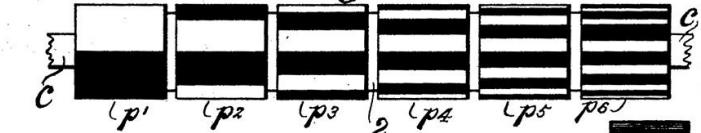


Fig. 7.

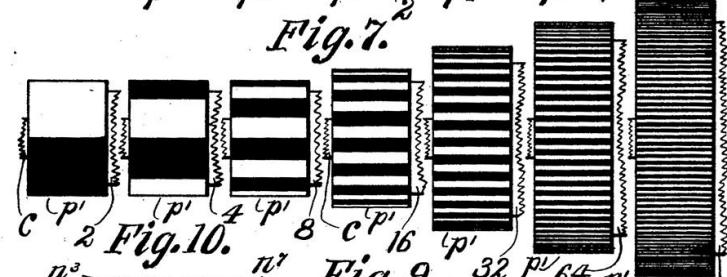
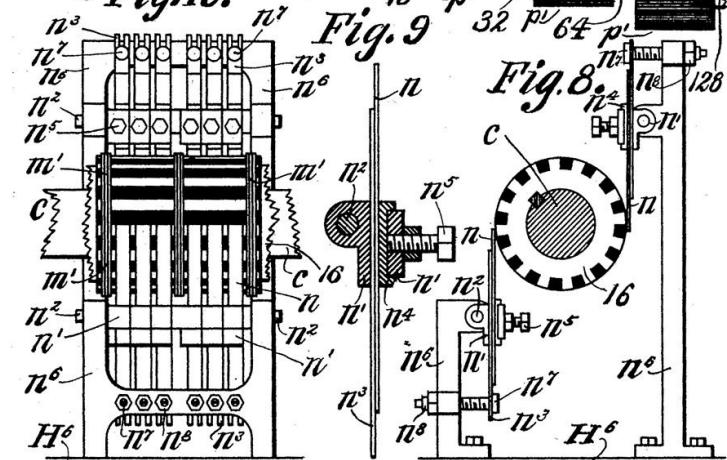


Fig. 10.



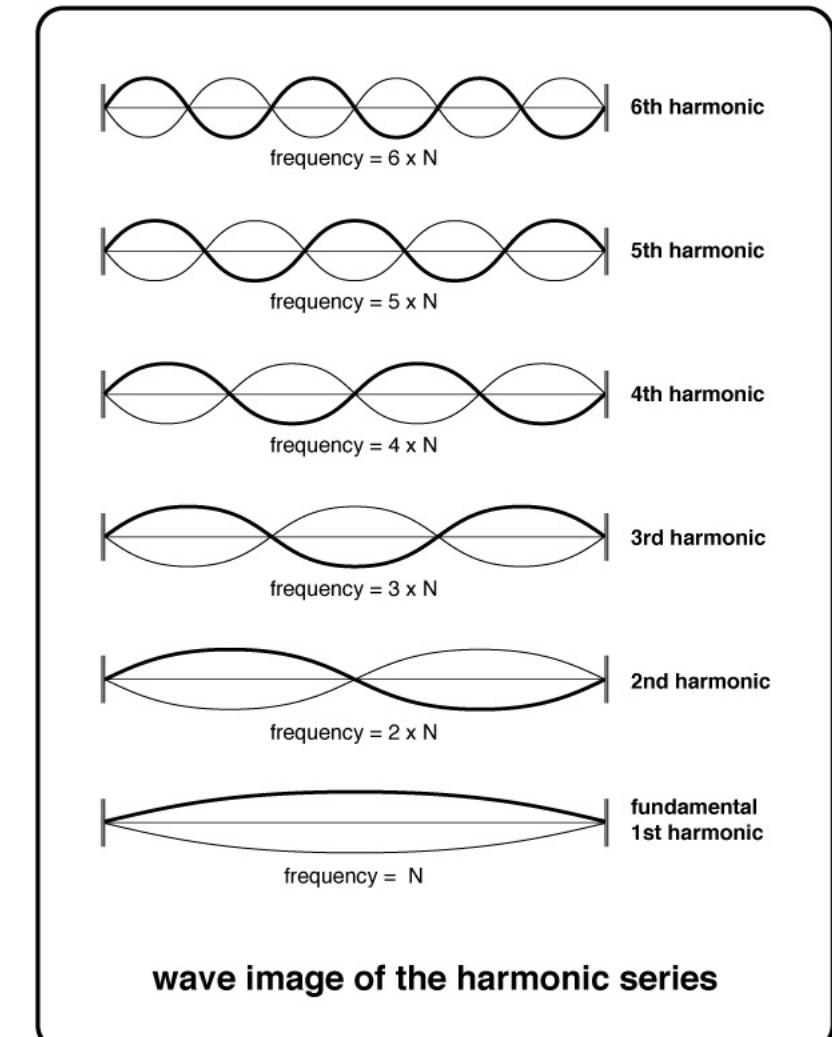
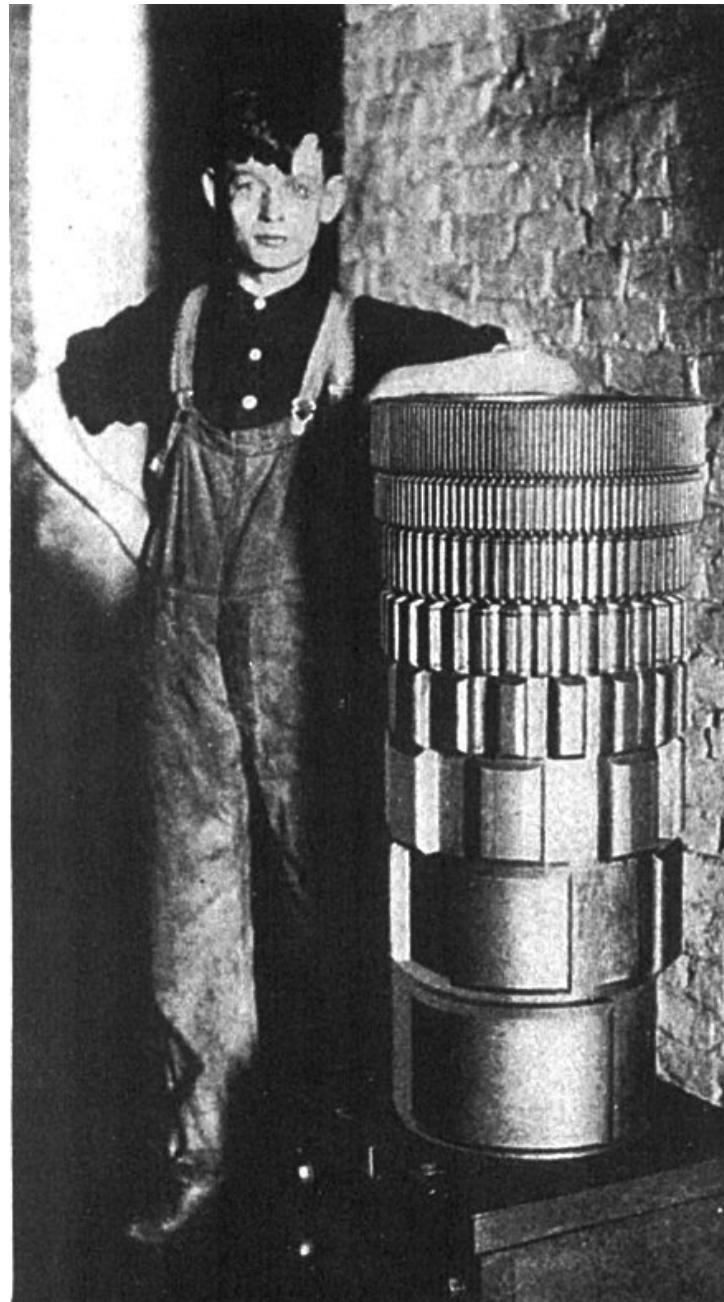
Att'est:
Arthur T. Cahill
M. H. Cahill

INC. NORRIS PETERS CO. PHOTO LITHO. WASHINGTON, D. C.

Inventor:
Thomas Cahill

WEEK 2

Telharmonium(1897)



WEEK 2

Theremin (1922)



WEEK 2

Theremin (1922)



<https://youtu.be/uuBwiiMKLb0>

WEEK 2

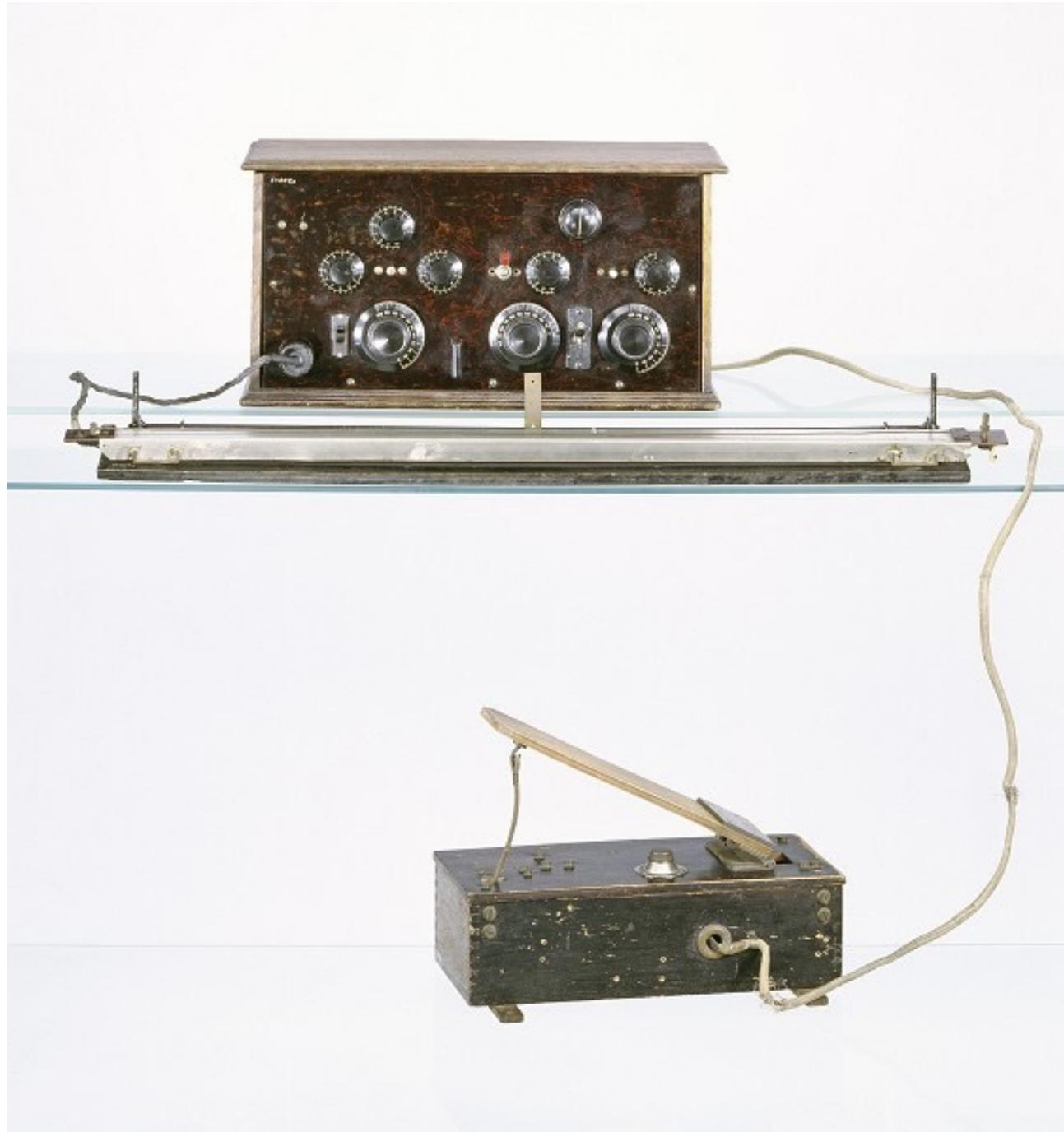
Ondes-Martenot (1928)



<https://youtu.be/yidV0HeVyCg>

WEEK 2

The Trautonium (1930)



WEEK 2

The Volkstrautonium (1932)



https://youtu.be/pAHCS_GYRt0

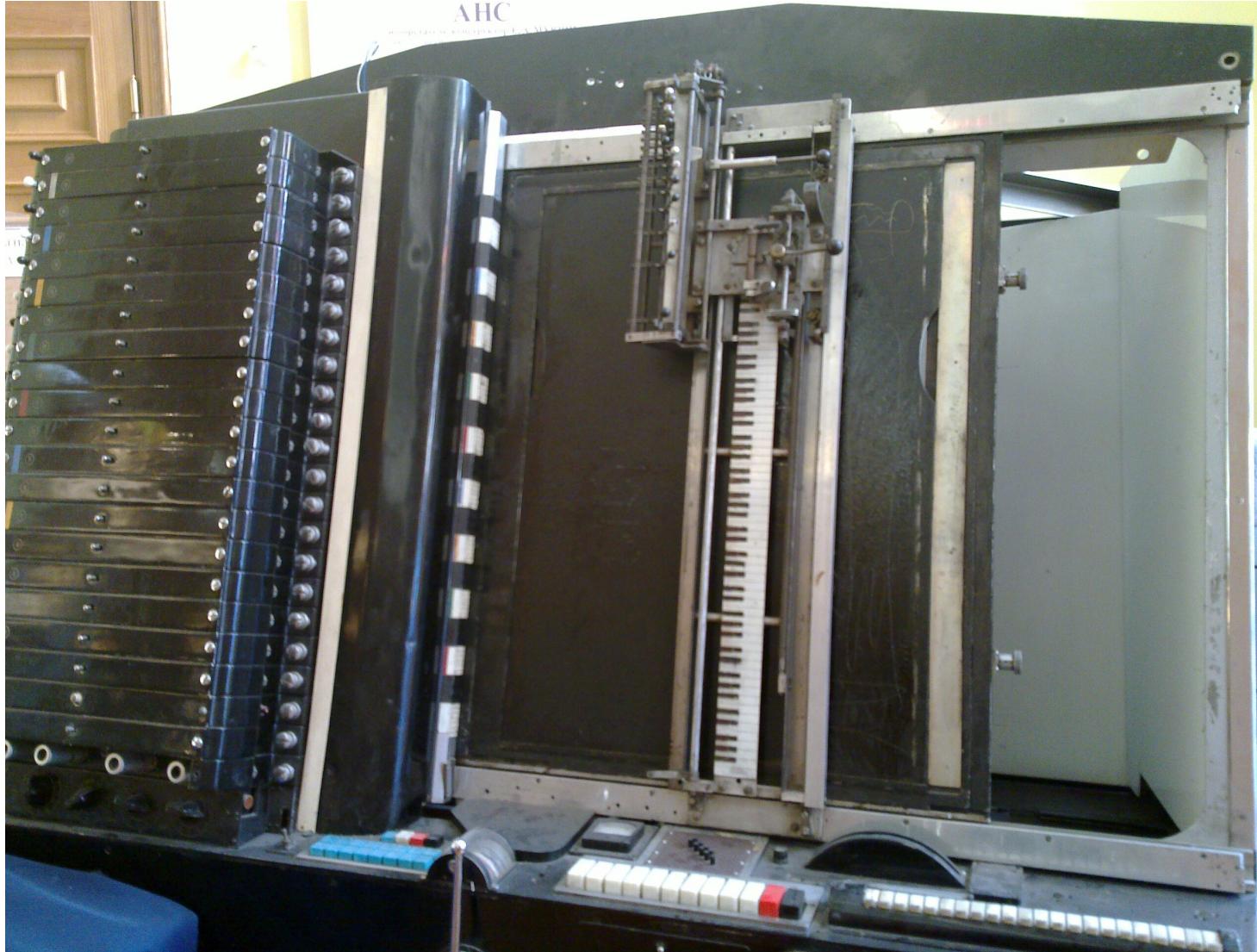
WEEK 2

Novachord (1939)



WEEK 2

The ANS Synthesizer (1959)



WEEK 2

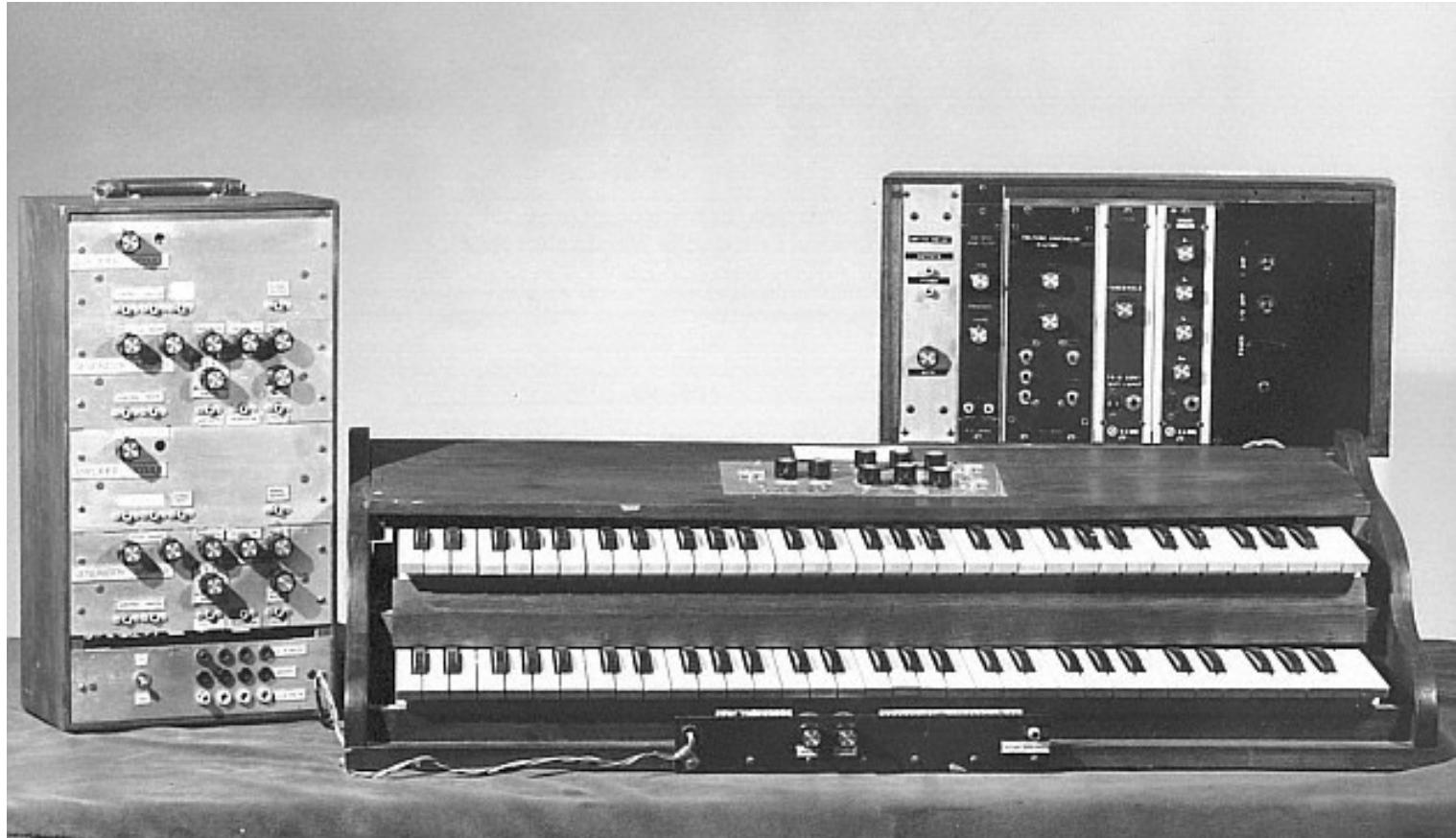
The ANS Synthesizer (1959)



<https://youtu.be/5vyD4rEDfv4?t=53>

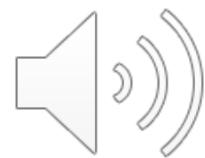
WEEK 2

MOOG Synthesizers (1963)



WEEK 2

MOOG Synthesizers (1963)



(Wendy Carlos - Brandenburg Concerto No. 3 in G Major.mp3)

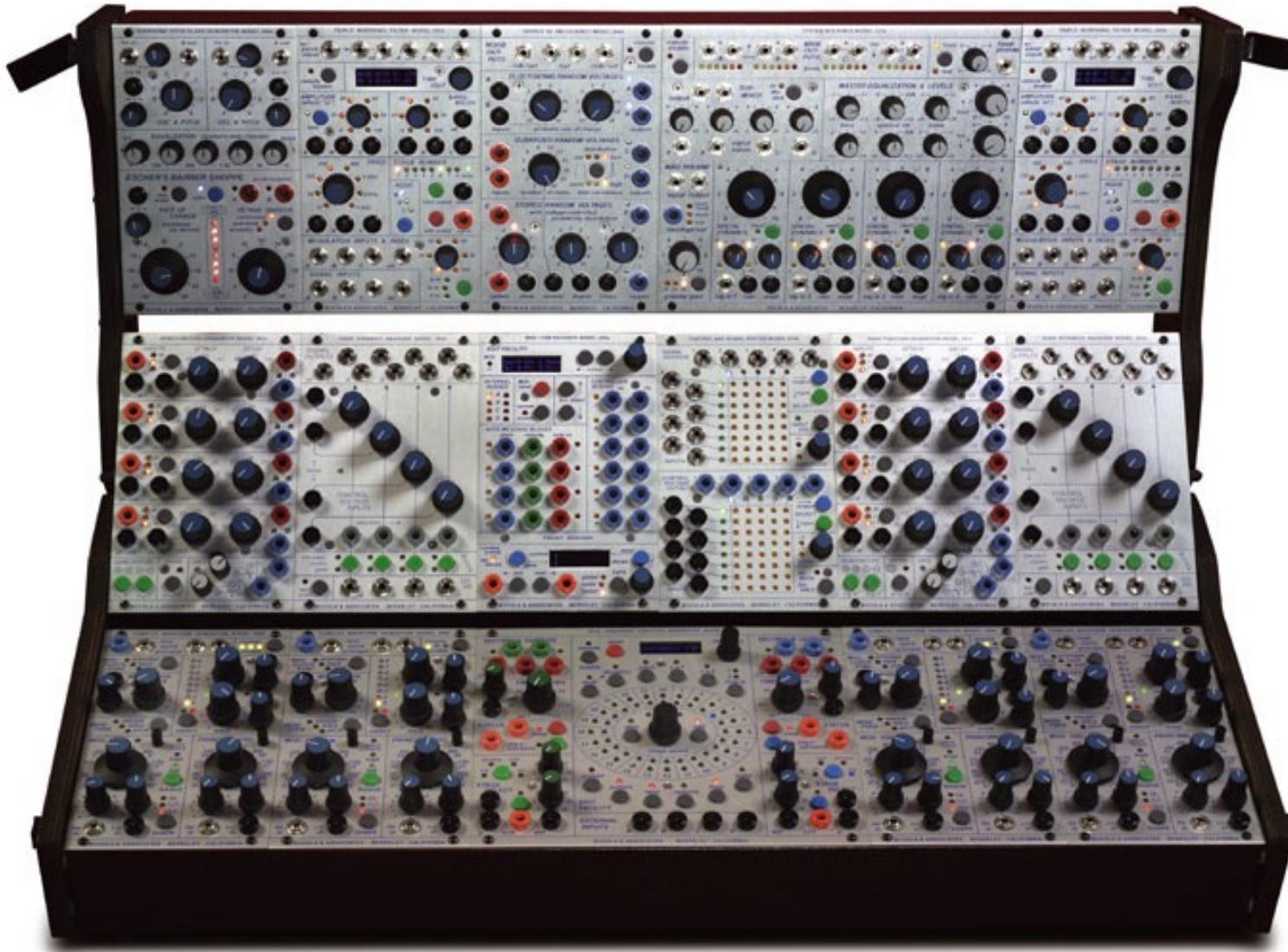
WEEK 2

MOOG Synthesizers (1963)



WEEK 2

Buchla Electronic Musical Instruments (1963)



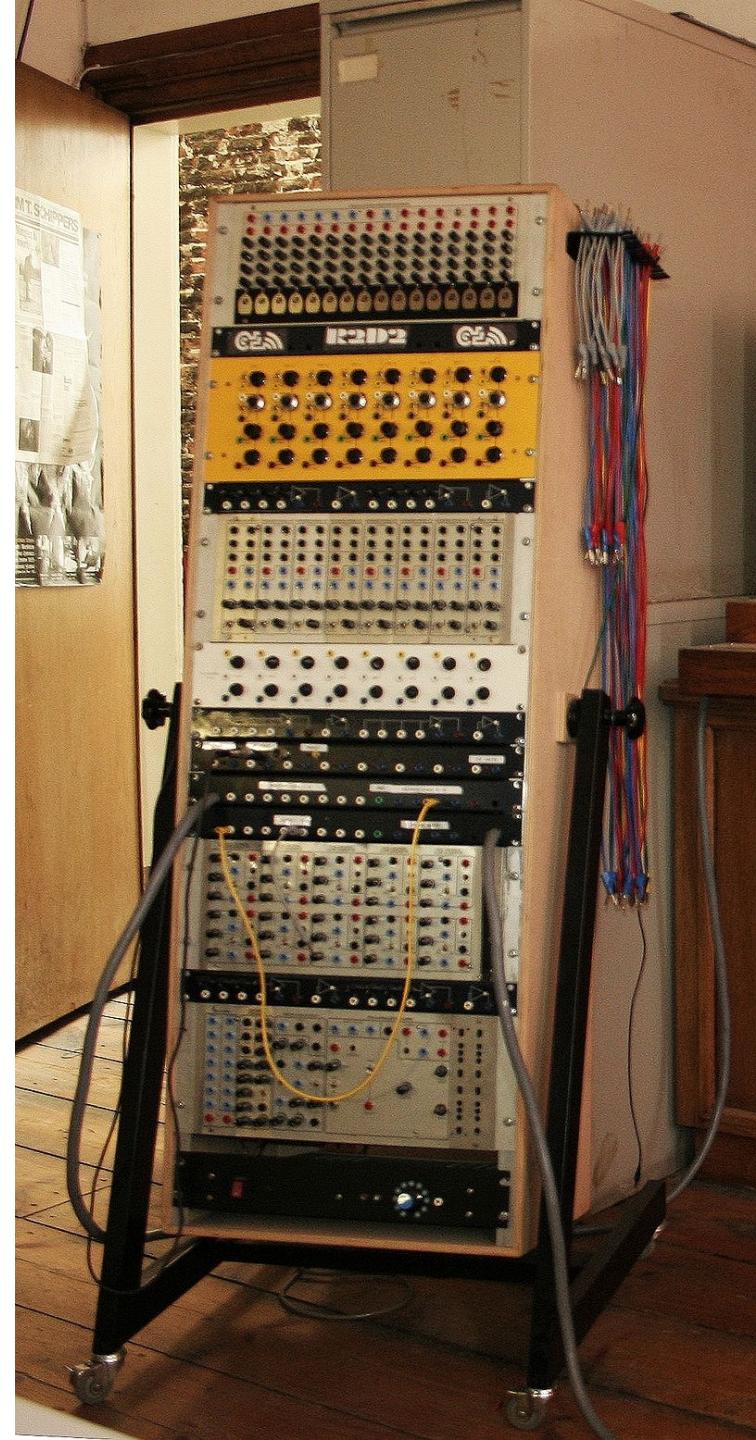
WEEK 2

Buchla Electronic Musical Instruments (1963)



<https://youtu.be/CG48Y5dL9J8>

WEEK 2



WEEK 2

Analog Synthesis part 1

b) Concepts & parameters

WEEK 2

Sound waves

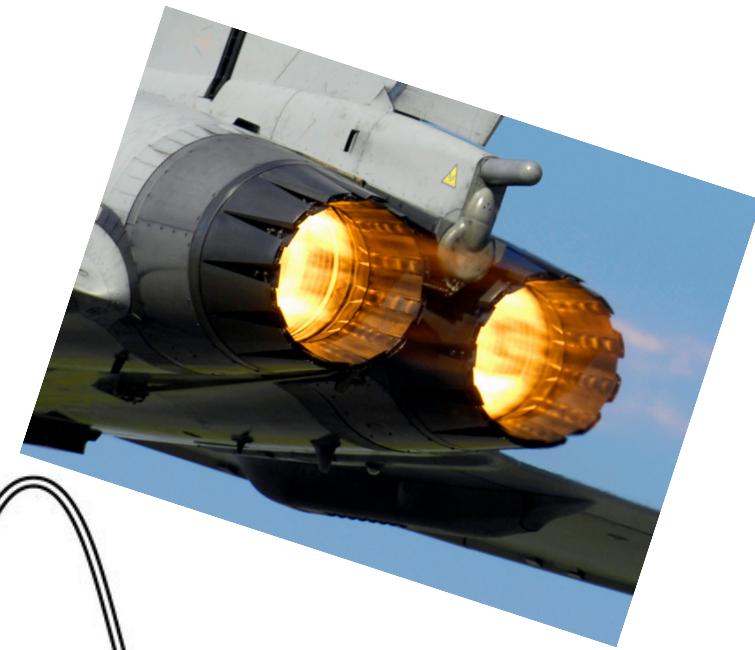
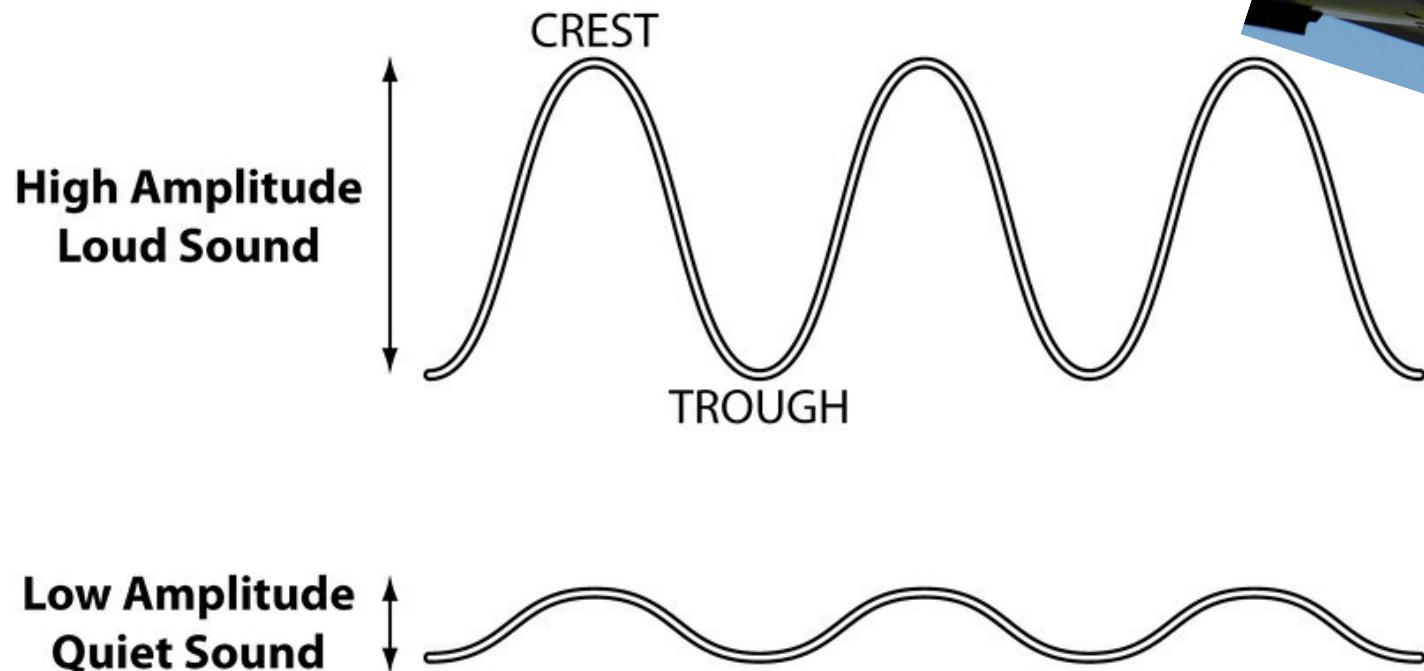


WEEK 2
Amplitude



WEEK 2
Amplitude

Amplitude of Sound Waves



WEEK 2
Envelope



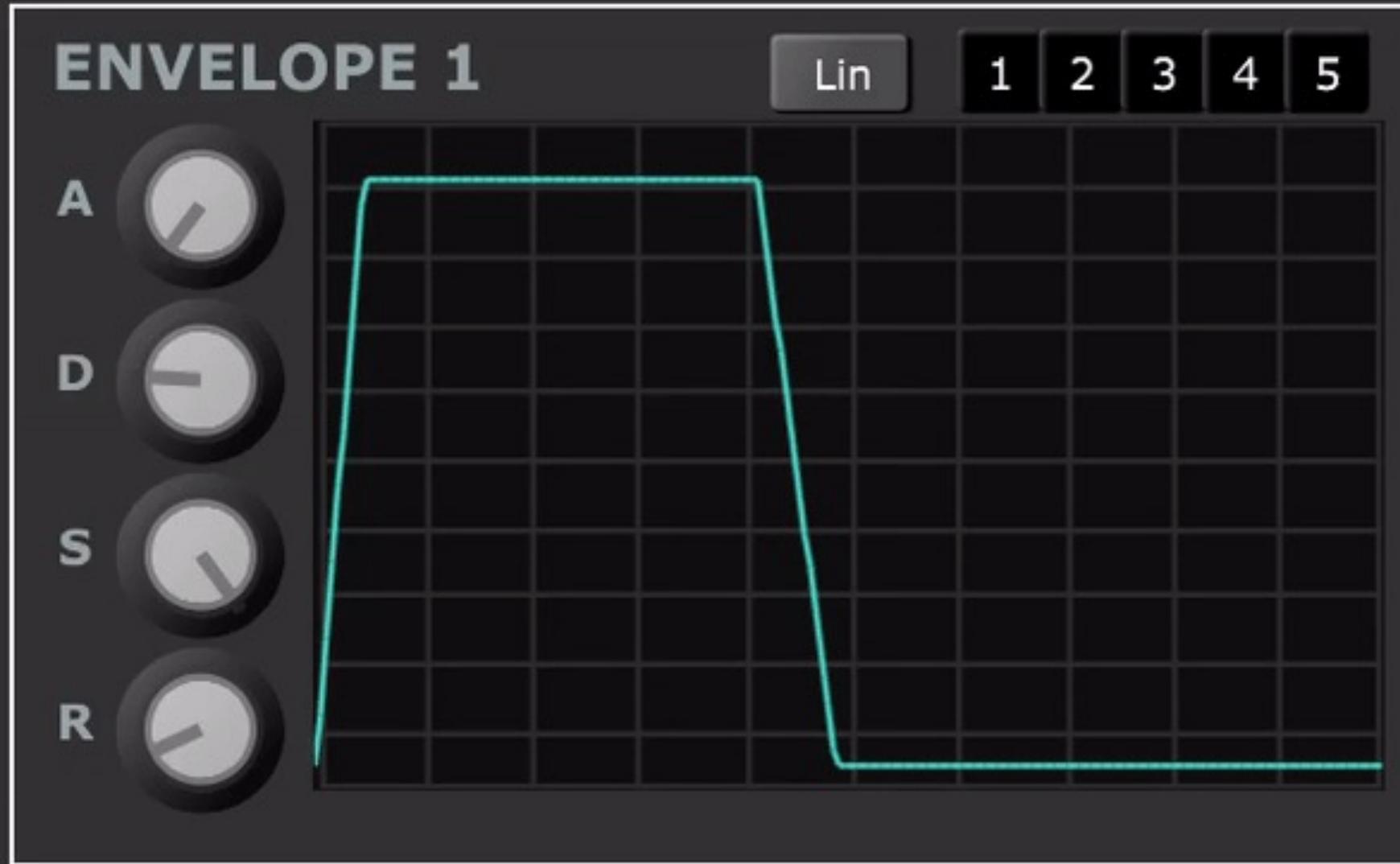
WEEK 2
Envelope

Attack

Decay

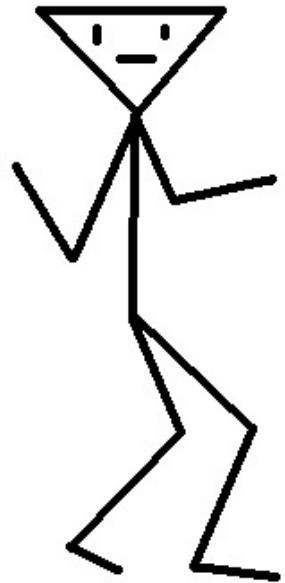
Sustain

Release



WEEK 2

Frequency

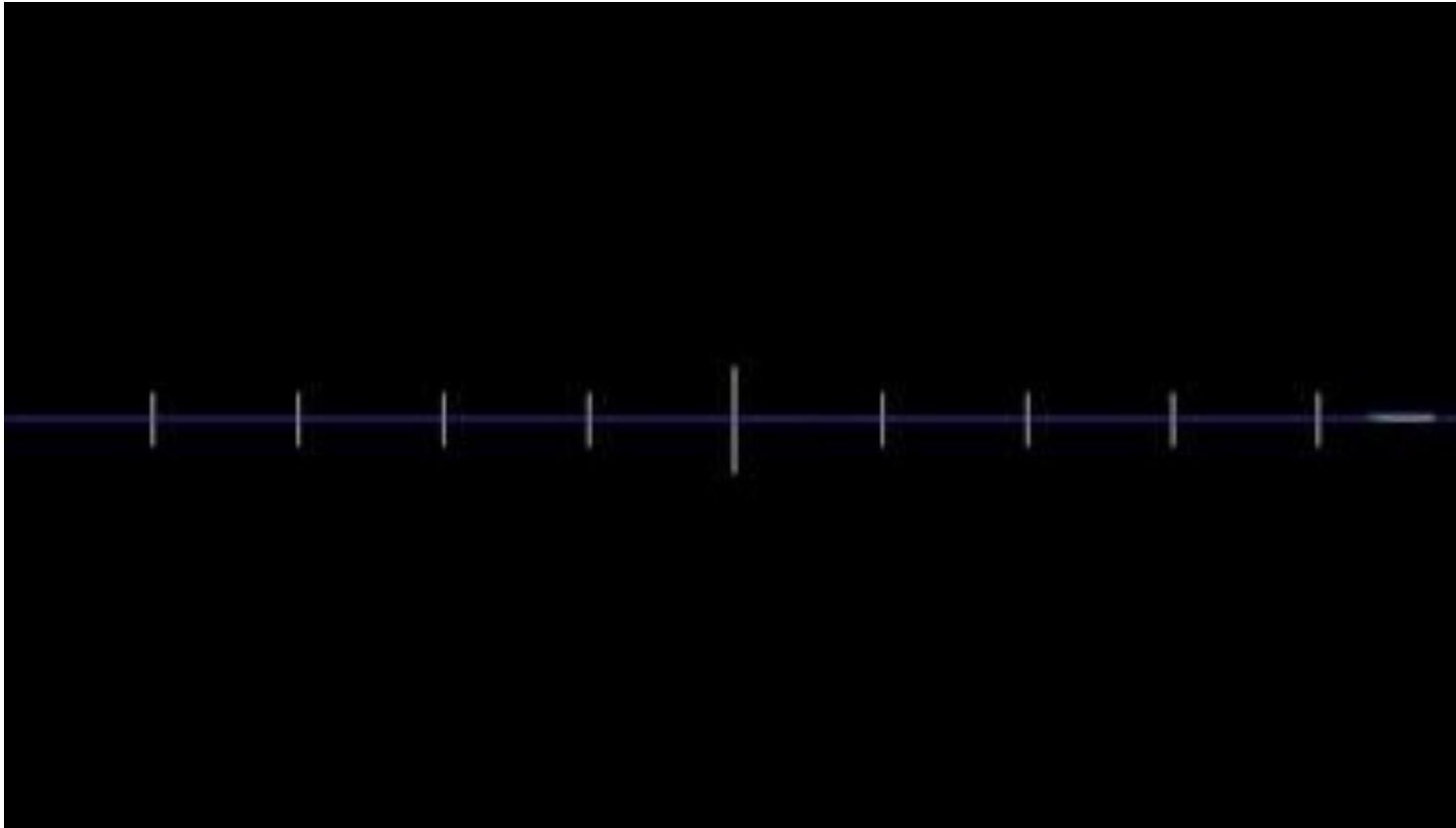


glickr.com

<https://youtu.be/HTmKgbT3PFA>

WEEK 2

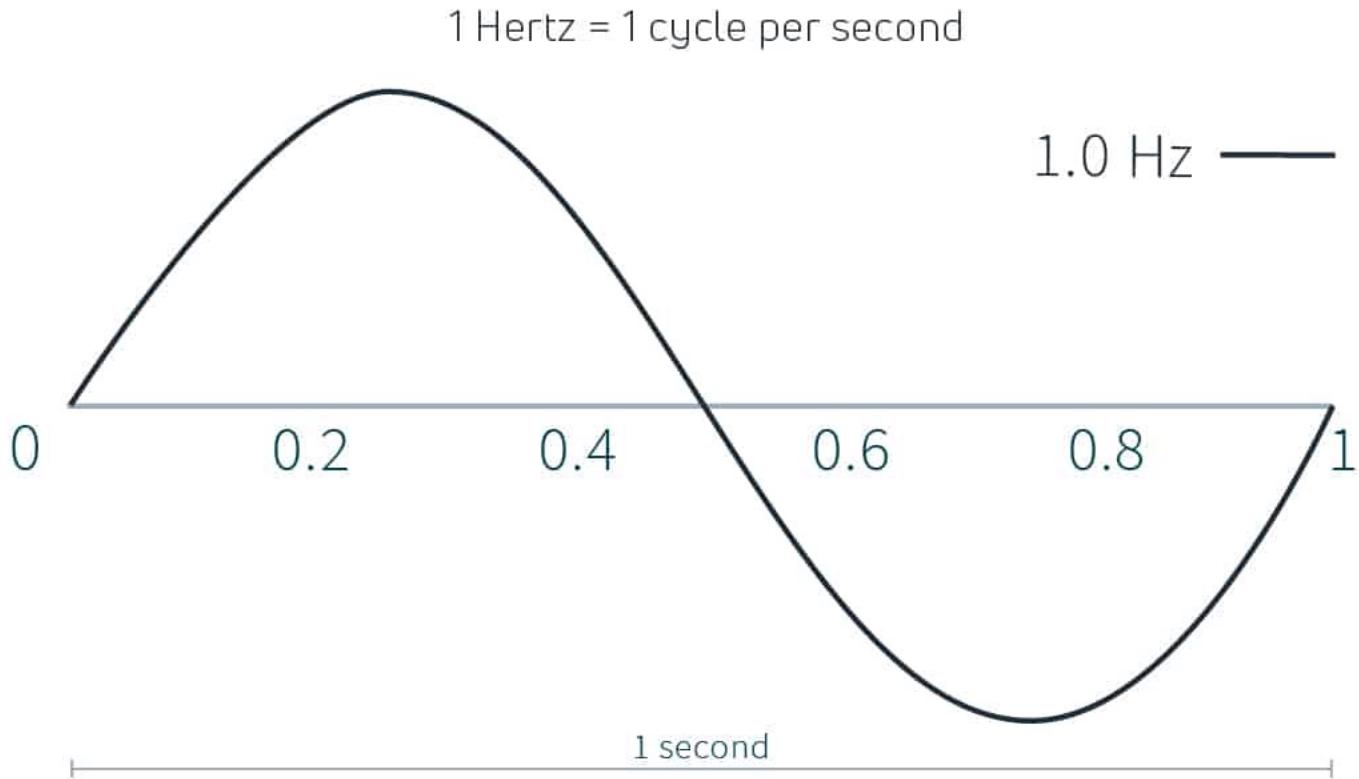
Frequency



<https://youtu.be/TgZjYIPPe50>

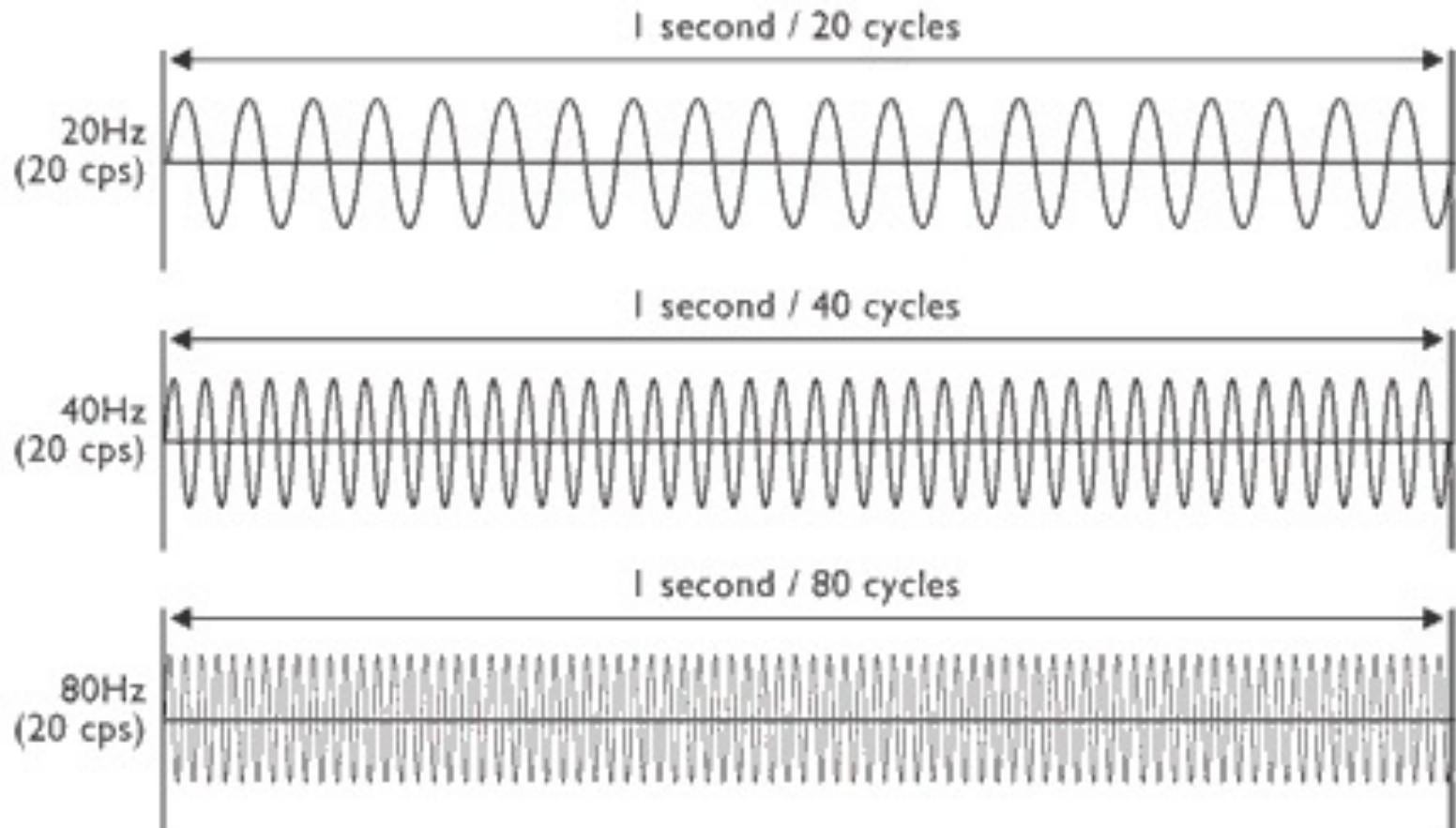
WEEK 2

Frequency

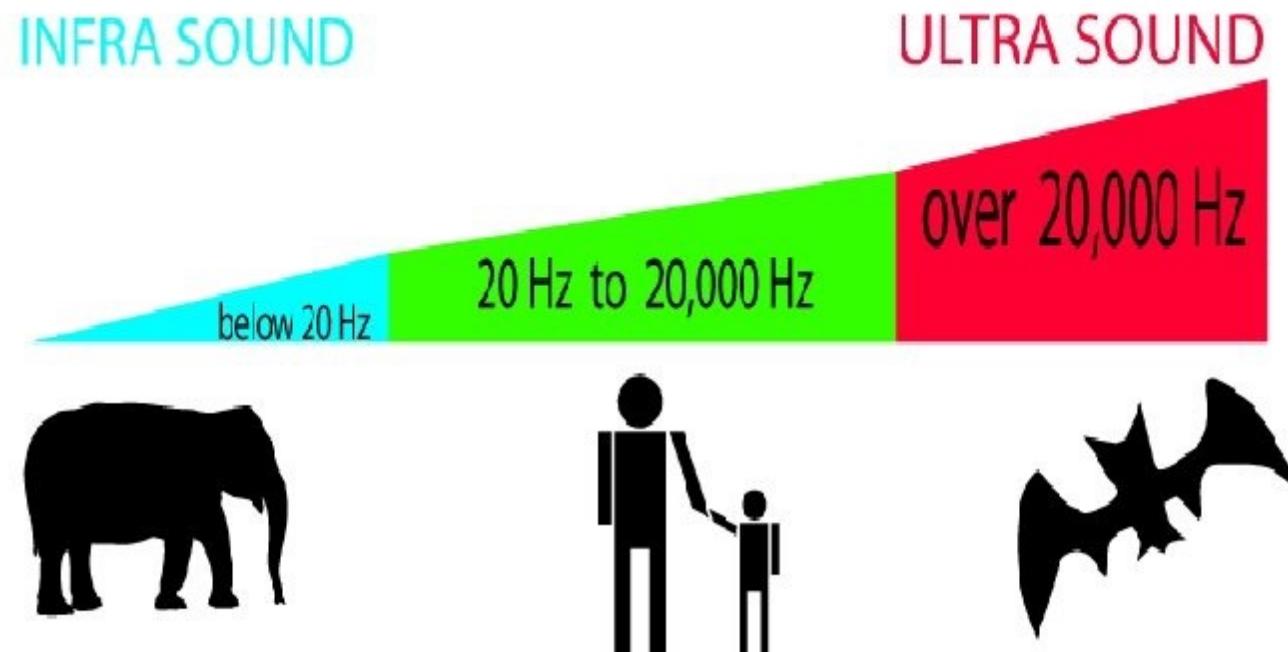


WEEK 2

Frequency



WEEK 2
Frequency



how equipment works .com

Humans can hear sounds that vibrate between 20 times a second (20 Hertz) to about 20,000 times a second (20,000 Hertz).

WEEK 2
Frequency

Signal frequency: 891 Hz



www.youtube.com/adminofthissite

<https://youtu.be/qNf9nzvnd1k>

WEEK 2

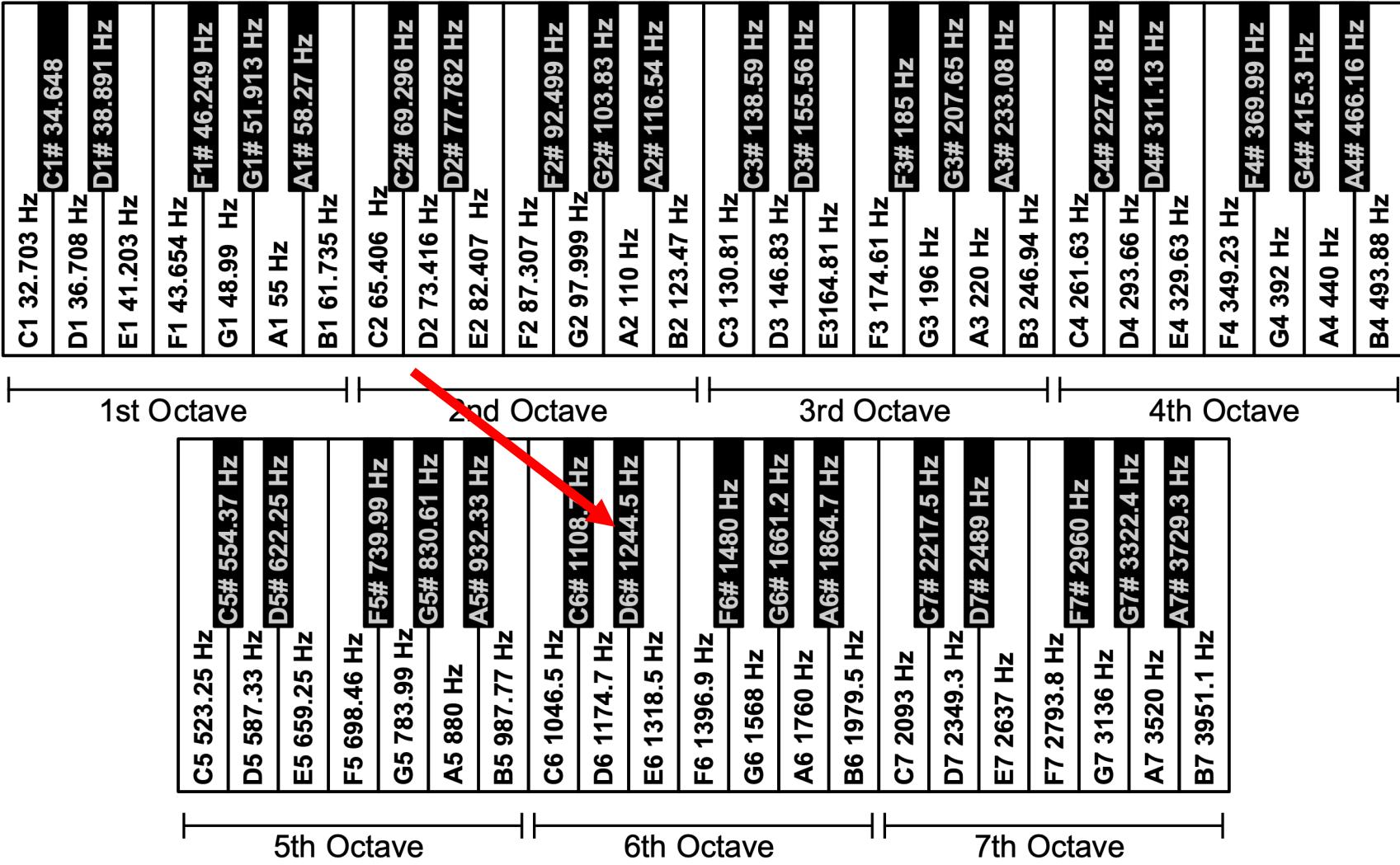
Frequency



<https://youtu.be/FKDbx3INXEU>

WEEK 2

Frequency



WEEK 2

Summary

- The evolution of electronic music and synthesizers
- Sound waves
- Amplitude
- Envelope
- Frequency

WEEK 2

Next time



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That's all, folks ☺