



SYNTHESIZERS

Synthesizers are electronic instruments that generate waveforms

Types of Synthesizers



Moog Modular

Types of Synthesizers



Moog Modular

Types of Synthesizers



Minimoog Model D

Types of Synthesizers



Nord Electro 4

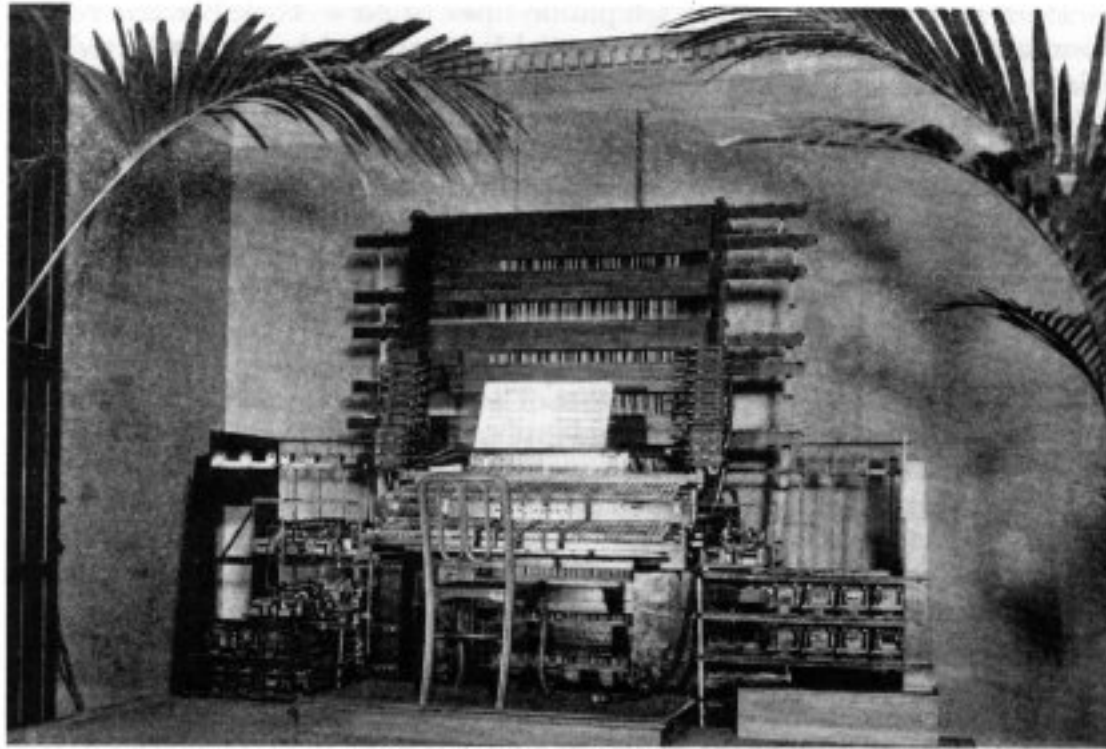
Types of Synthesizers



Quasimidi Quasar Sound Module

History of Synthesizers

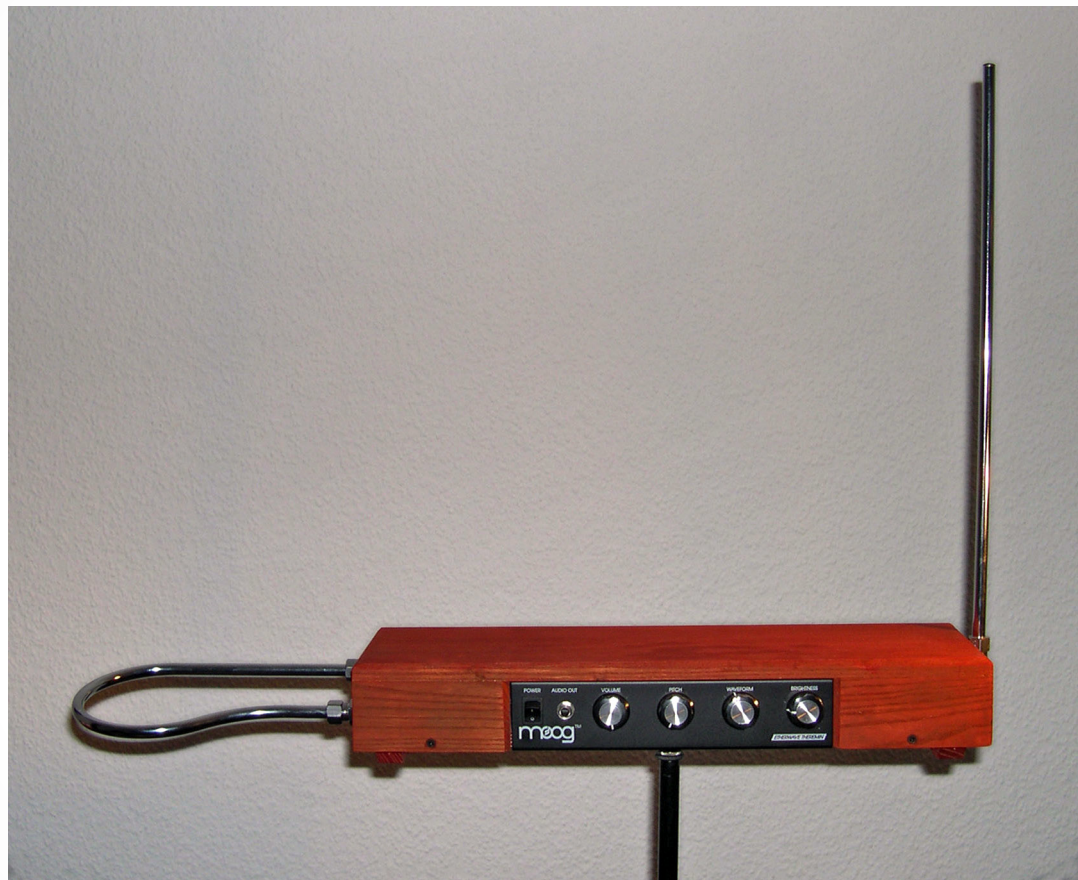
1896 - Telharmonium



- Thaddeus Cahill, American inventor
- weighed 200 tons
- velocity-sensitive keys
- 12 steam-powered electromagnetic generators
- 1906 - Series of “concerts”

History of Synthesizers

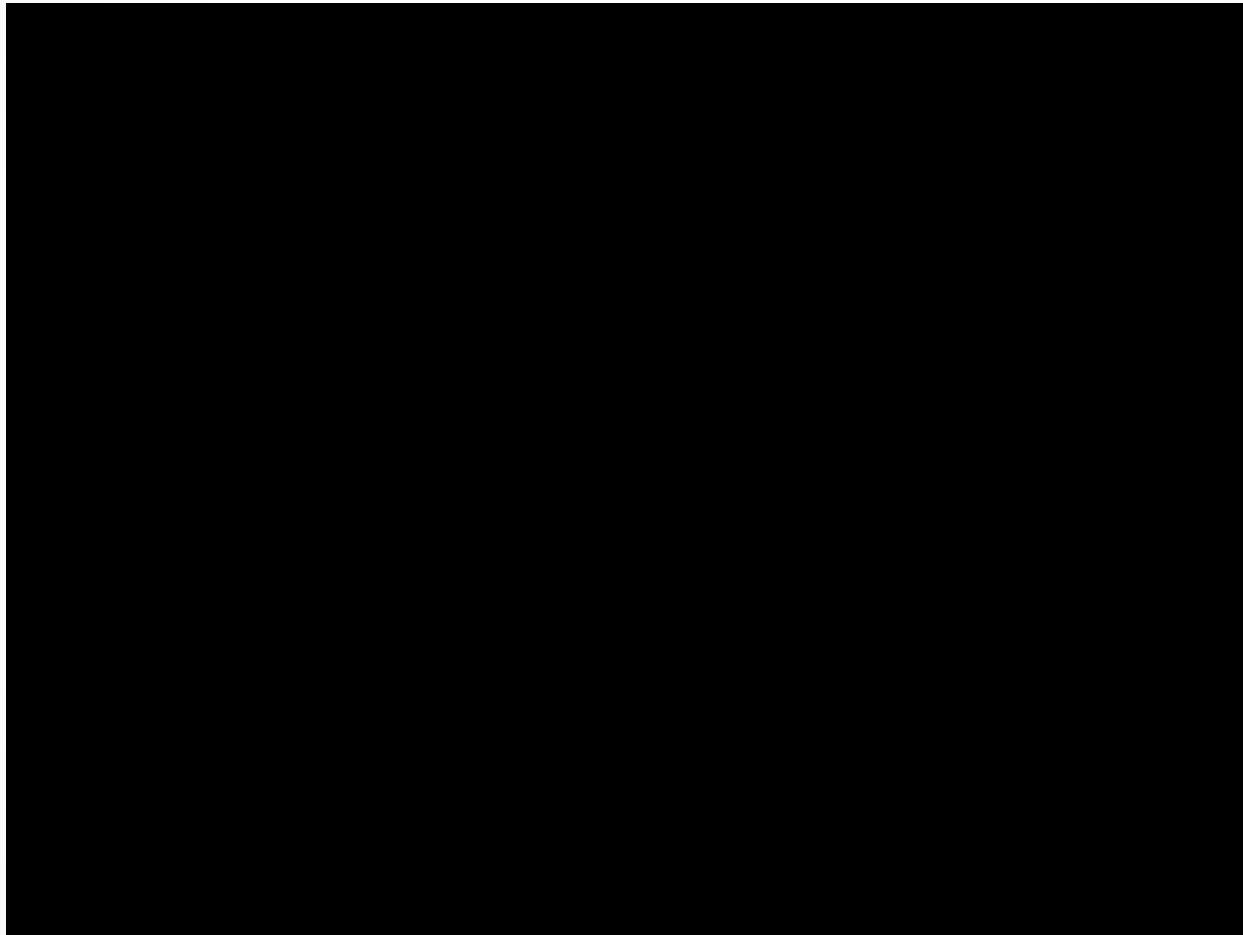
1919 - Theremin



- Leon Theremin, Russian inventor
- No touching
- Similar quality of timber to voice

History of Synthesizers

1919 - Theremin



- Leon Theremin,
Russian inventor
- No touching
- Similar quality of timber to voice

History of Synthesizers

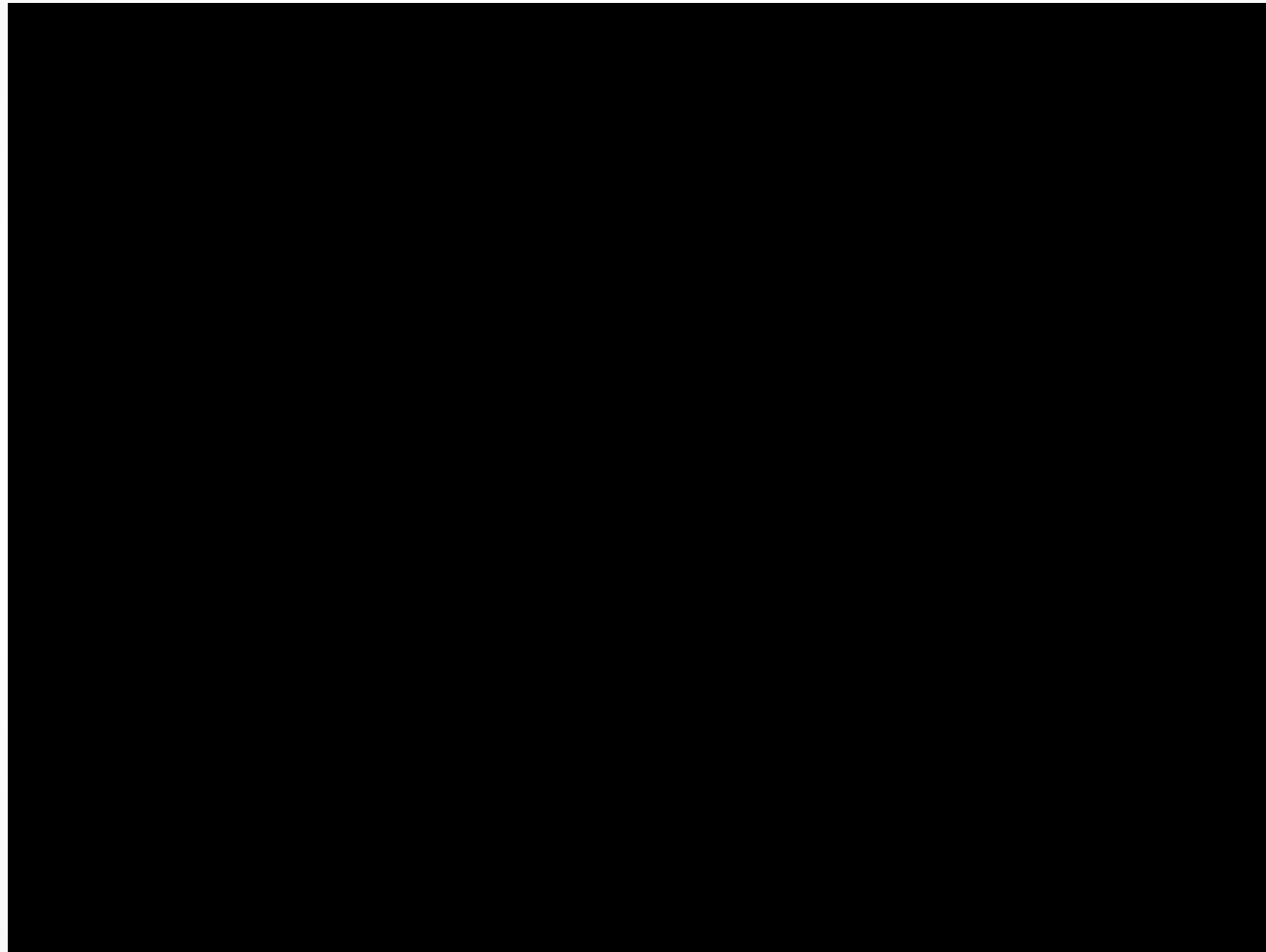
1929 – Ondes Martenot



- Maurice Martenot, French cellist
- Similar to Theremin
- Used by Jonny Greenwood

History of Synthesizers

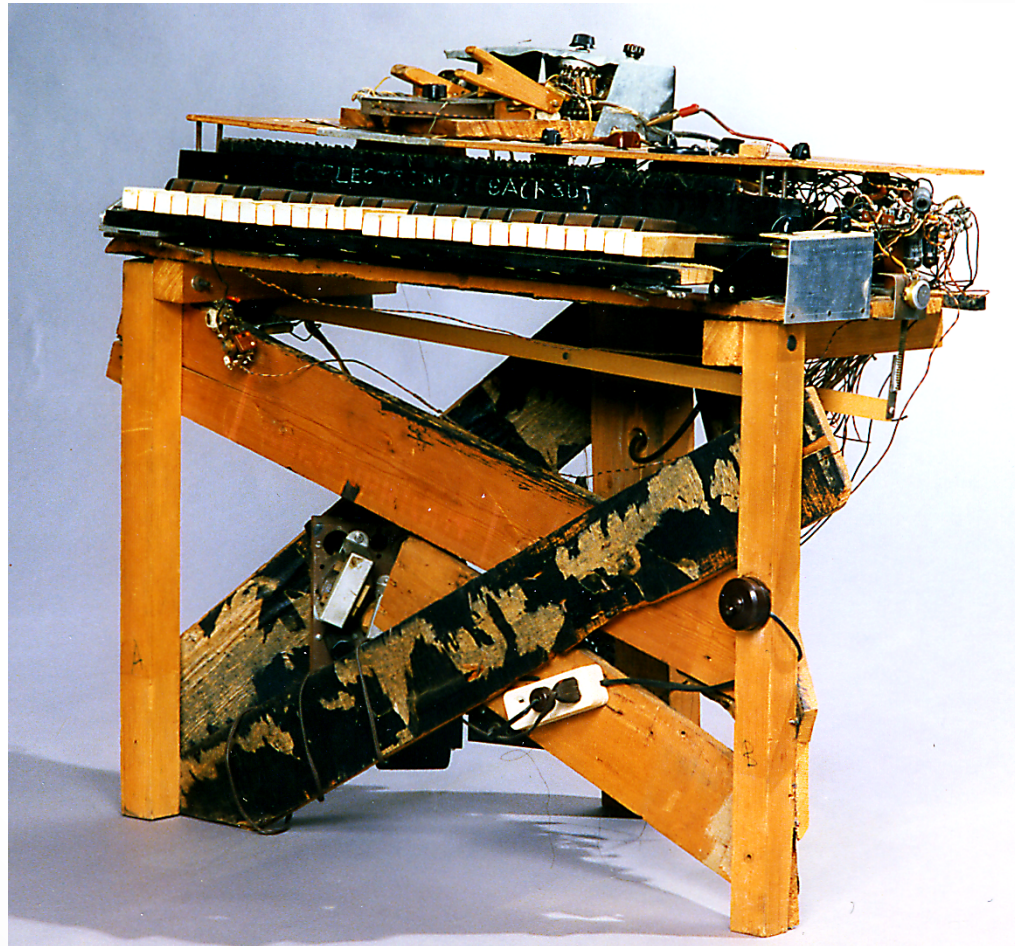
1929 – Ondes Martenot



- Maurice Martenot, French cellist
- Similar to Theremin
- Used by Jonny Greenwood

History of Synthesizers

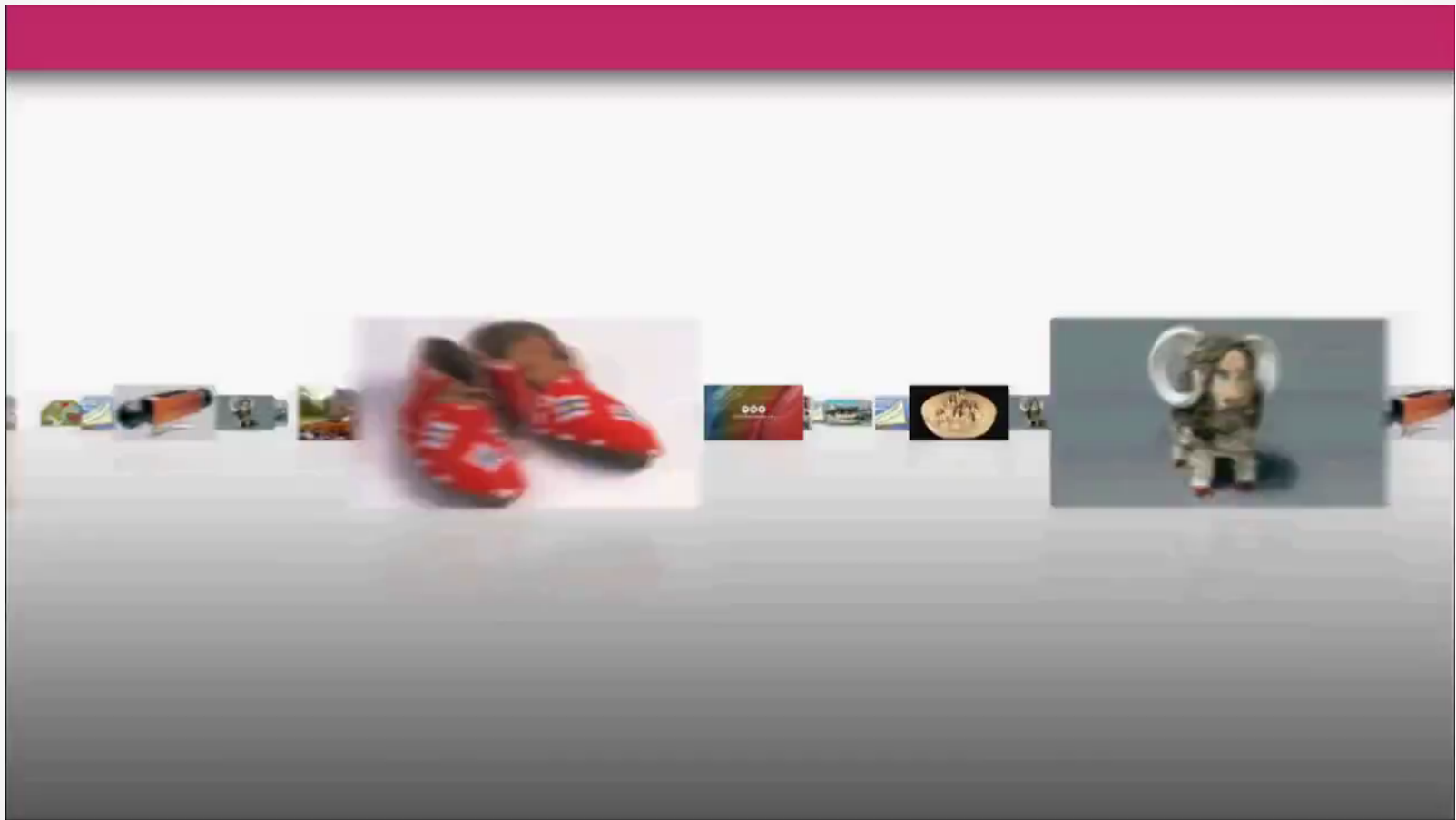
1945 – Electronic Sackbut



- Hugh Le Caine,
Canadian luminary
- First voltage based synth
- Looks awesome.

History of Synthesizers

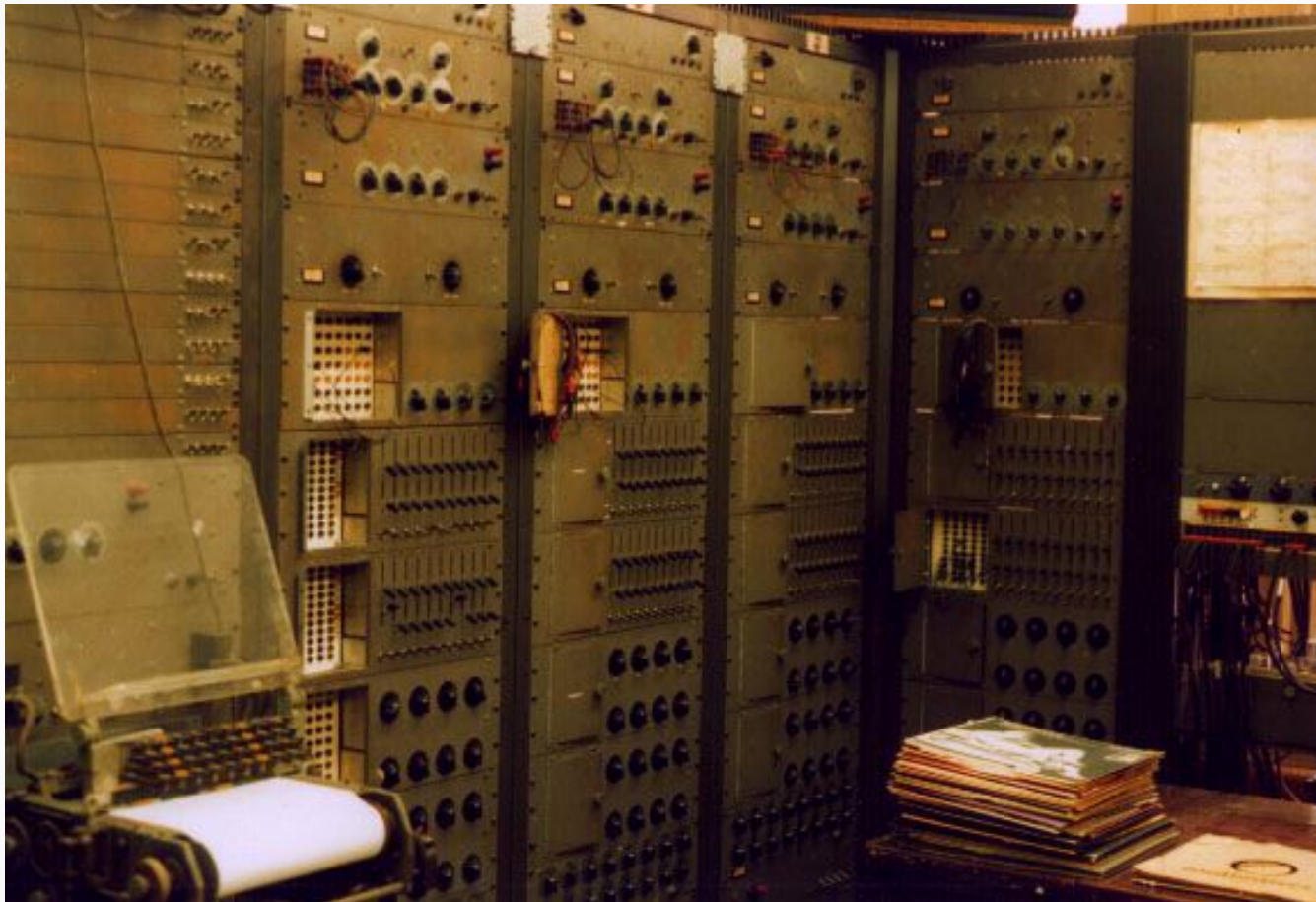
1945 – Electronic Sackbut



- Hugh Le Caine,
Canadian luminary
- First voltage based synth
- Looks awesome.

History of Synthesizers

1957 – RCA Mark II Sound Synthesizer



- Herbert Belar and Harry Olson, RCA/Columbia University
- Size of a room
- Had a sequencer

History of Synthesizers

1965 – Modular synthesizers



- Bob Moog,
American innovator
- Simon and Garfunkel (1968)
- The Beatles – Abbey Road(1969)

History of Synthesizers

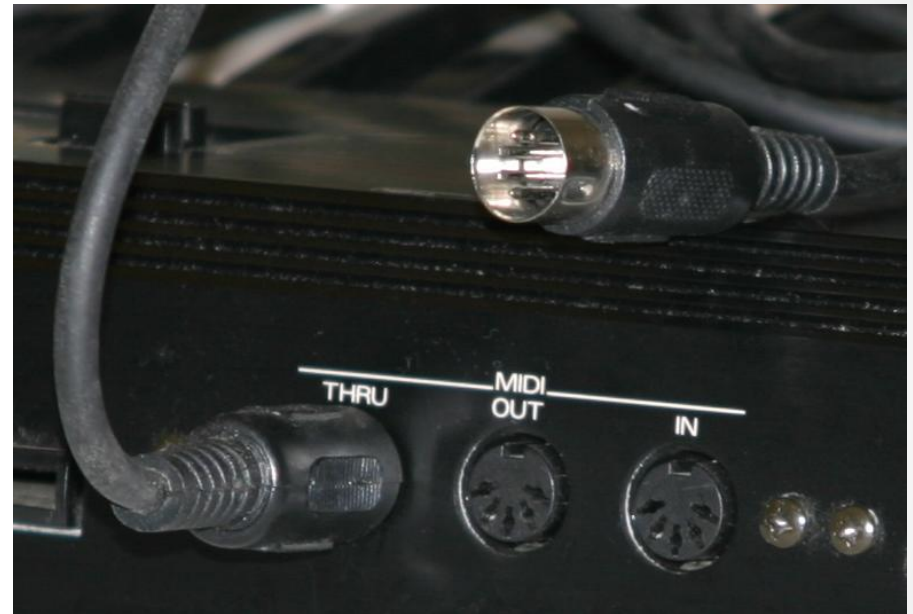
1969 – Compact synthesizer



- Bob Moog,
American innovator
- Easier to use
- Cheaper

History of Synthesizers

1983 – MIDI



- Technical standard
- Synchronize tempos
- Simply transports data
- 16 channels

History of Synthesizers

1990s – Software Synthesizers



- Run on general purpose computers
- Virtual controls
- Emulate physical synthesizers

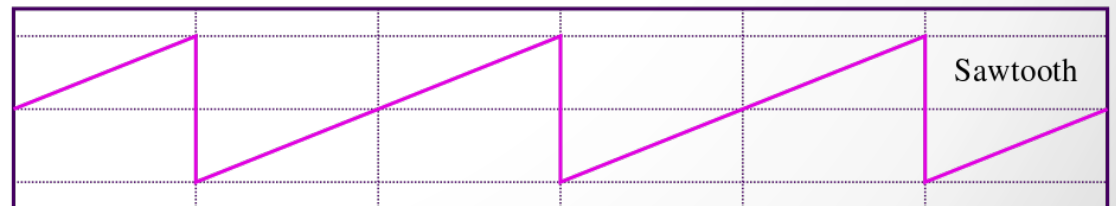
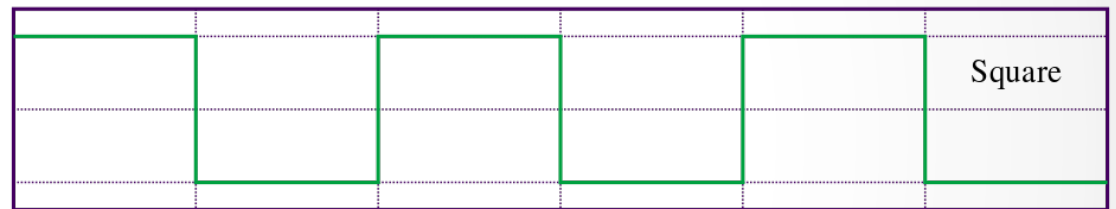
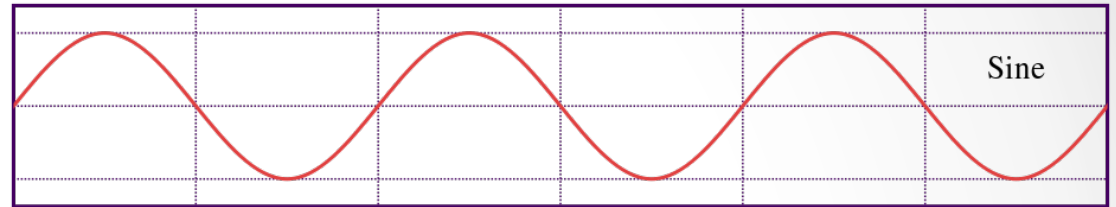
How do synthesizers shape
sounds?

Oscillators

Types

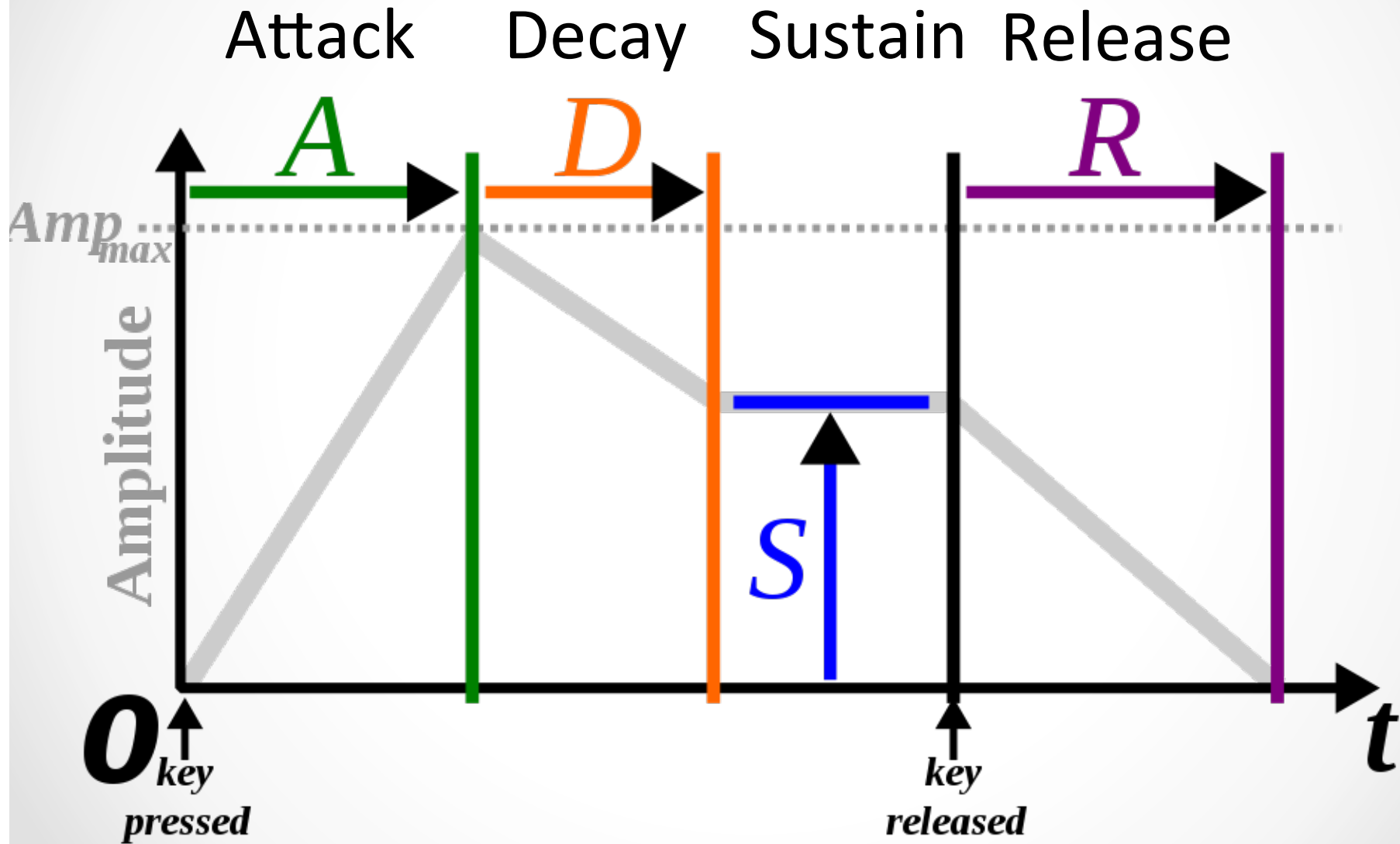
– Electronic Oscillators

– Low Frequency Oscillators (LFOs)



Waveforms

Envelopes



Filters

