



TAPE MUSIC



The White Album // Revolution 9

LOGISTICAL THINGS

notetaker needed

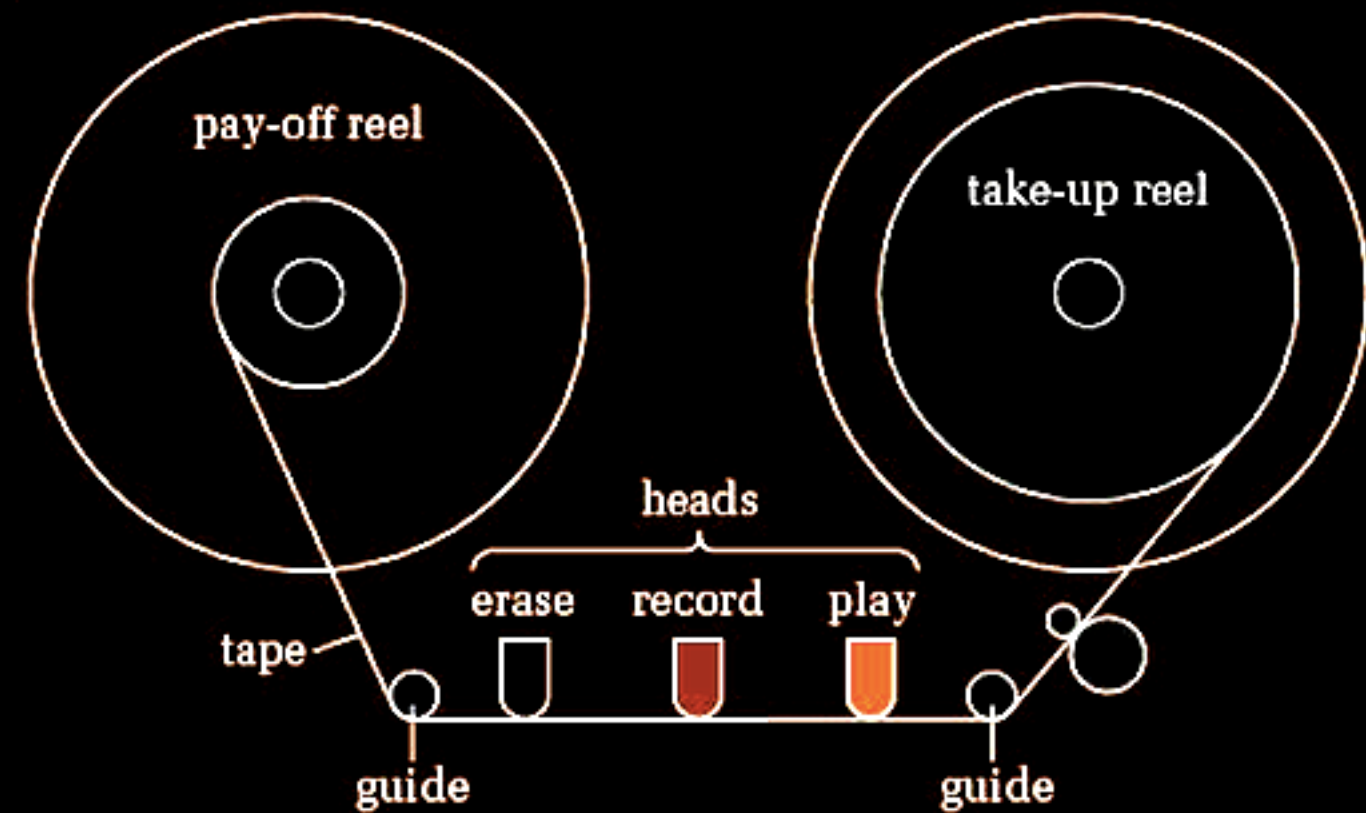
<http://yukon.accessiblelearning.com/virginia/ApplicationNotetaker.aspx>

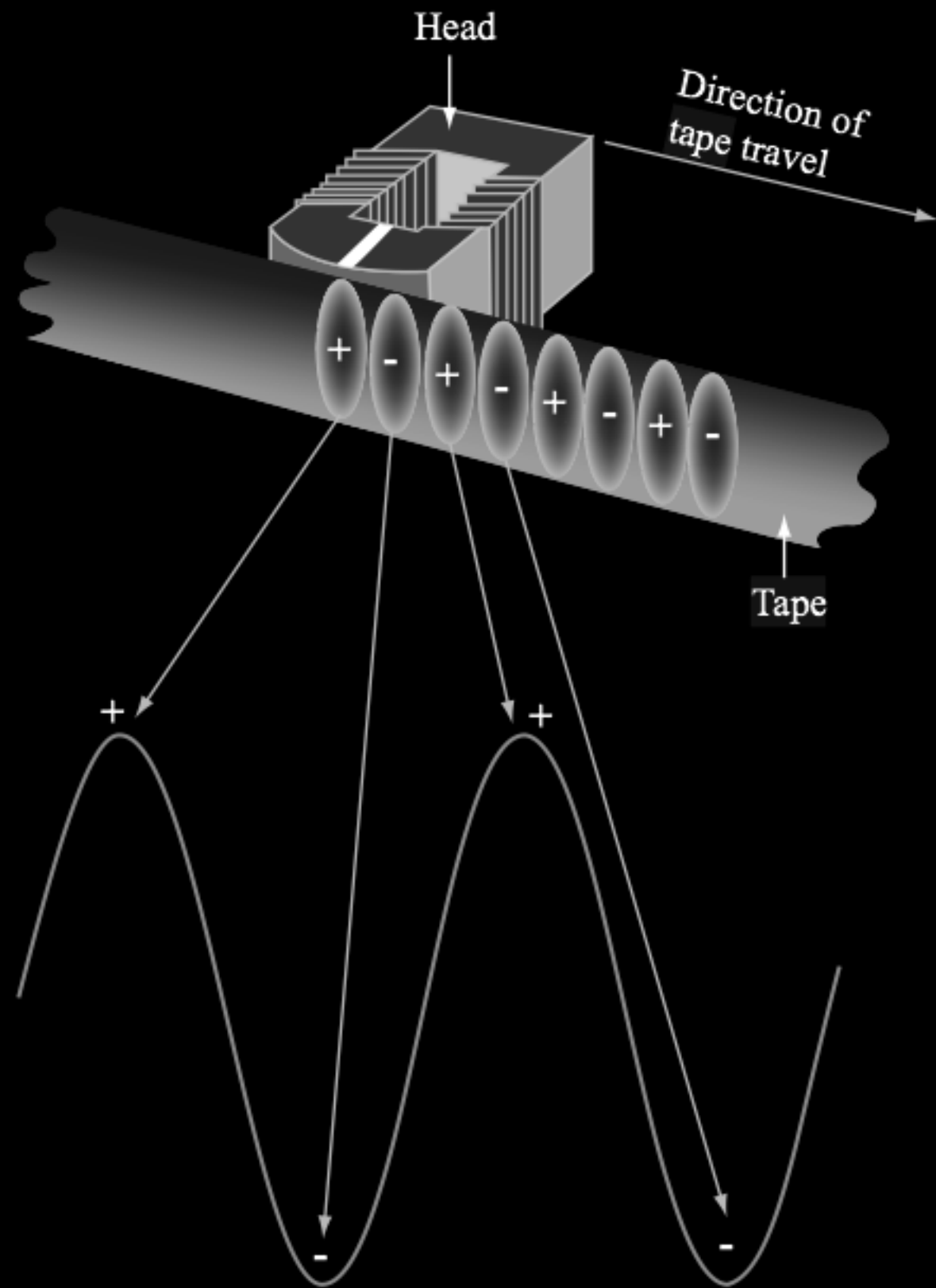
first project (sound collage) due this friday at 5pm

MAGNETIC TAPE

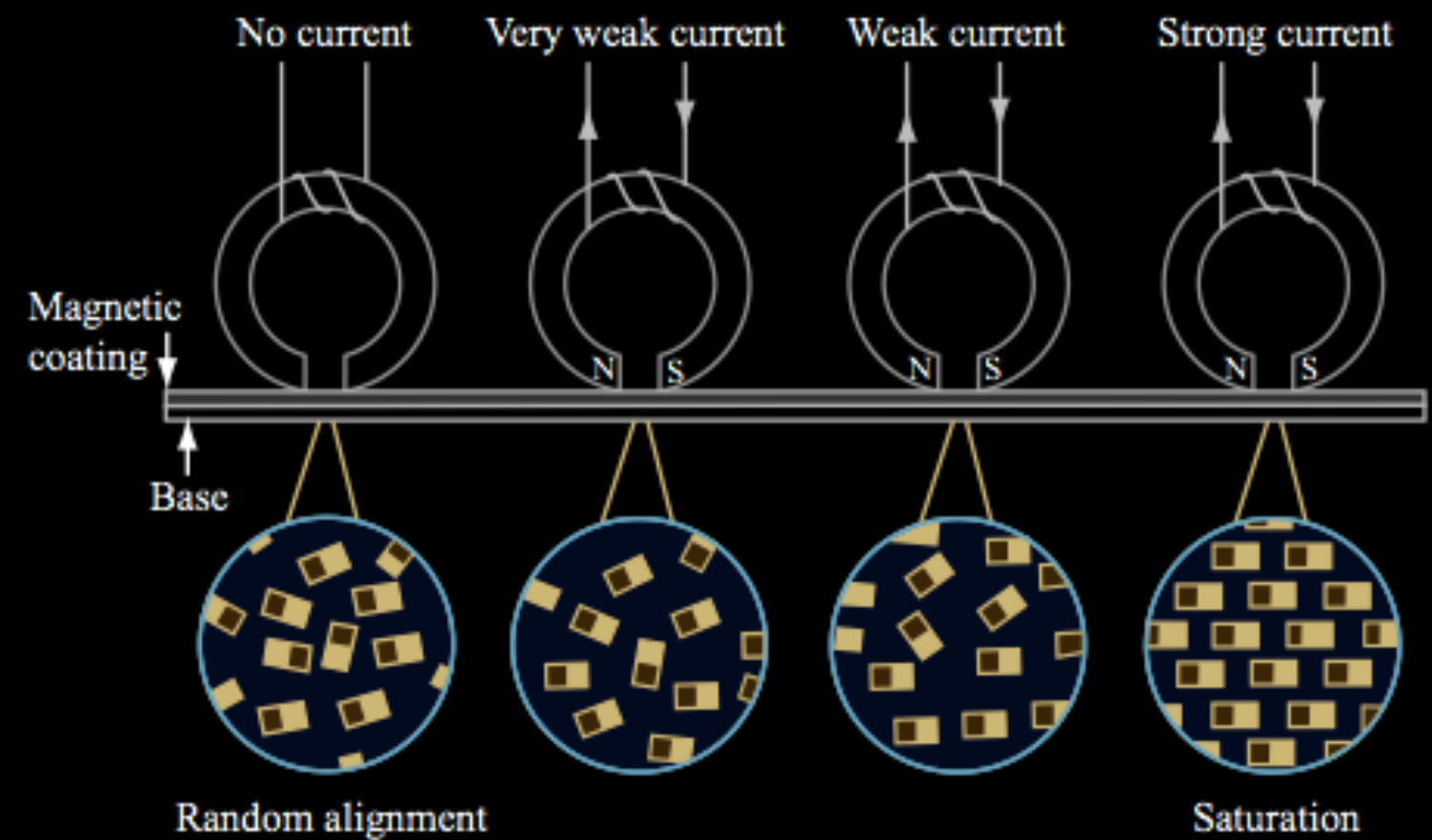


MAGNETIC TAPE RECORDERS





HOW IT WORKS



SPEED & BANDWIDTH

Tape Speed (inches/s)	Bandwidth	Use
38 cm/s (15)	20Hz - 20kHz	studio recording
19 cm/s (7.5)	30Hz - 15kHz	home recording
9.5 cm/s (3.75)	40Hz - 13kHz	general use
4.8 cm/s (2)	50Hz - 6kHz	speech dictation

EDITING TAPE





BASIC TAPE MANIPULATION PROCEDURES

1. Speed - transposition
2. Backwards - direction
3. Cutting - remove attacks, change envelopes
4. Splicing - editing, crossfade sounds
5. Looping - create rhythm from repetition
6. Mixing - record multiple layers of sound
7. Delay – run one tape past two machines, mix outputs





EARLY EXPERIMENTS IN TAPE MUSIC

Halim El-Dabh

First known composer of tape music

The Expression Of The Zaar (1944)





ELECTRONIC MUSIC RESEARCH CENTERS

TO RECORD OR TO SYNTHESIZE

Music Concrete	Elektronische Musik
France	Germany
Recorded Sounds	Synthesized Sounds
Montage, Film	Art Music, Serialism
Pierre Schaeffer	Herbert Einmert

Music Concrete & the Paris Studio

PIERRE SCHAEFFER

Sound Objects (l'Objet Sonore)

Listen: *Etude Aux Allures* (1958)

ELEKTRONISCHE MUSIK

& the Cologne Studio

NWDR (Northwest German Broadcasting) Studio opens in 1951

Founded by Herbert Einmert, Robert Beyer, & Dr. Werner Meyer-Eppler

listen: Herbert Einmart's *Klangstudie II* (1952)

Karlheinz Stockhausen

Worked at both the Paris and Cologne Studios

Listen: Gesang der Jünglinge (Song of the Youths) (1955-56)

KONTAKTE (1958)

Karlheinz Stockhausen



Focus on spatialization of sound (Quadrophonic Sound)

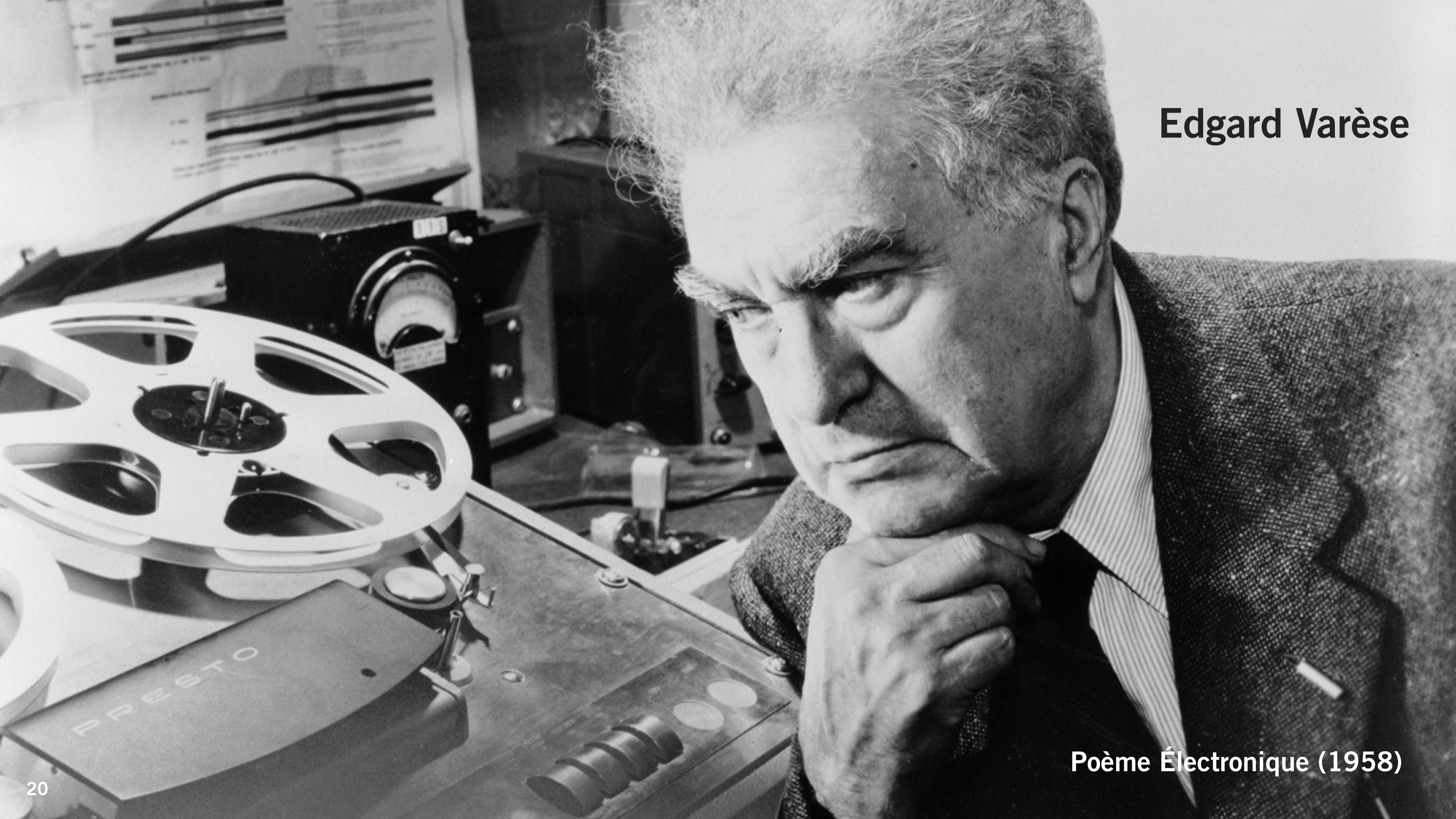
Wanted to create the effect of sound spinning around the listener at different speeds

Spatial projection of sound mixed to stereo, similar to techniques used later by the Beatles, Pink Floyd, and Jimi Hendrix.

Brussels World's Fair (1958)

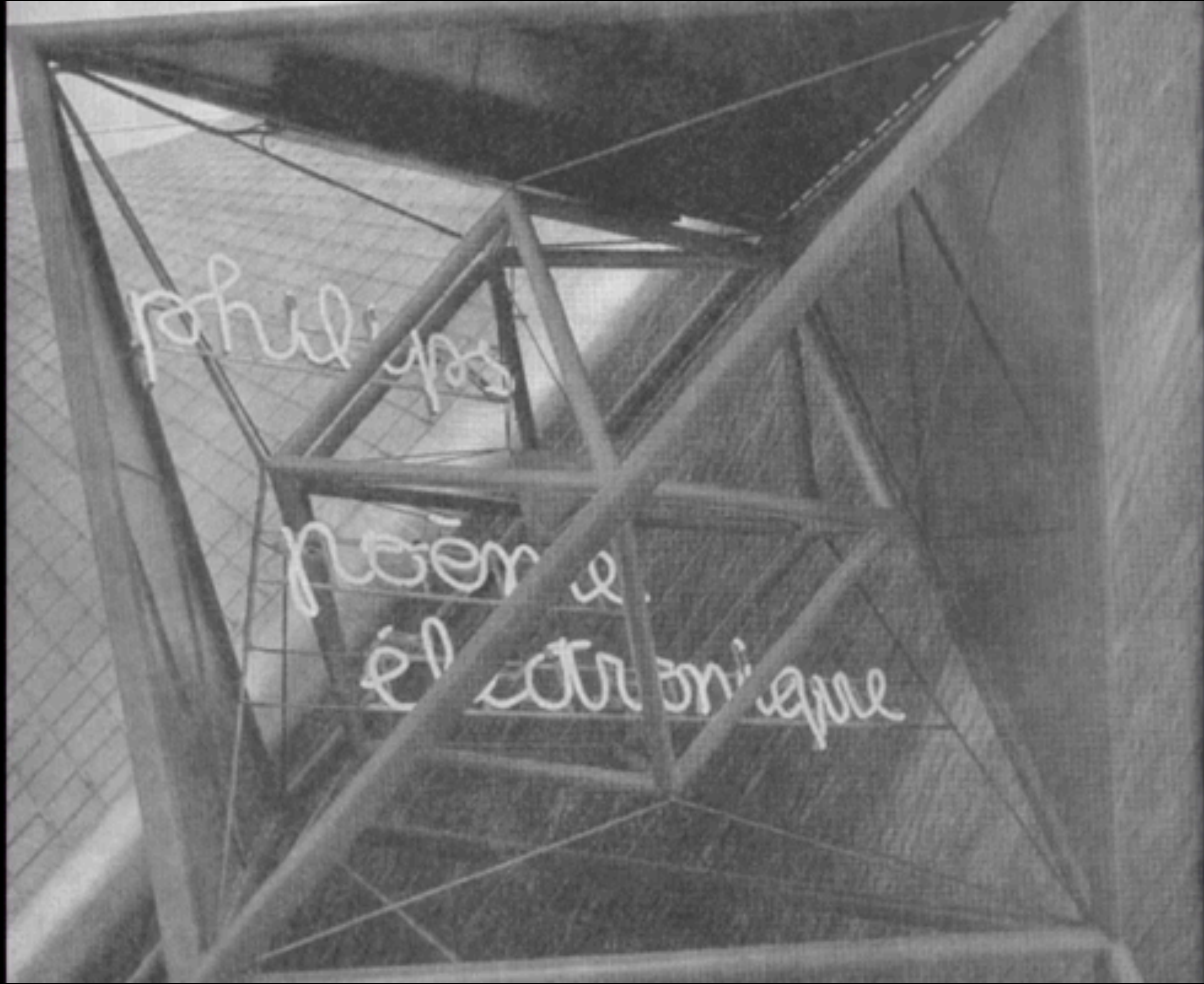
The Philips Pavilion





Edgard Varèse

Poème Électronique (1958)



A black and white photograph of Iannis Xenakis. He is shown from the chest up, seated and looking off-camera to the right. He has dark, wavy hair and is wearing a light-colored, button-down shirt under a dark vest. His hands are clasped in his lap. The background is out of focus, showing what appears to be a bookshelf on the right and some papers or a wall on the left.

Iannis Xenakis

CONCRET PH (1958)

GRANULAR SYNTHESIS

End of the Poème électro- nique	!	!	!	!	!	!	!	!	!	!	Start of the Poème électro- nique
5 to 10 sec.	!	10 to 15 sec.	!	!	!	!	!	!	!	5 sec.	!
of Absence=	!	A voice announces	!	90 to 100 sec.	!	of a rhythmic signal	!				!
Silence +	!	the presentation	!		!	understandable by	!				!
Reflections	!	is over, <u>ordering</u>	!		!	an international	!				!
of still,	!	the audience to	!	Clouds of intermittent	!	audience, for	!				!
diffused	!	to leave the hall,	!	sounds, varying in density	!	example: the blows	!				!
light which	!	in a quite sharp	!	and intensity, and moving	!	of a hammer which	!				!
allows the	!	yet normal voice,	!	within the space of the	!	announce raising	!				!
audience to	!	in French or	!	pavilion.	!	the curtain at	!				!
move in the	!	English	!		!	the theater.	!				!
darkness	!		!		!		!				!

Diagram of the interlude
between presentations of
the *Poème électronique*.

Hugh Le Caine

Canadian scientist/composer with the National Research Council of Canada (NRC) in Ottawa

Transformations of a single sound source as an organizing principle, the sound of a single drop of water

Le Caine also invented the Electronic Sackbut in 1945, an early voltage controlled synthesizer (pictured)

Listen: Dripsody (1955)





Bebe & Louis Barron

NEW YORK CITY



Forbidden Planet (1956)

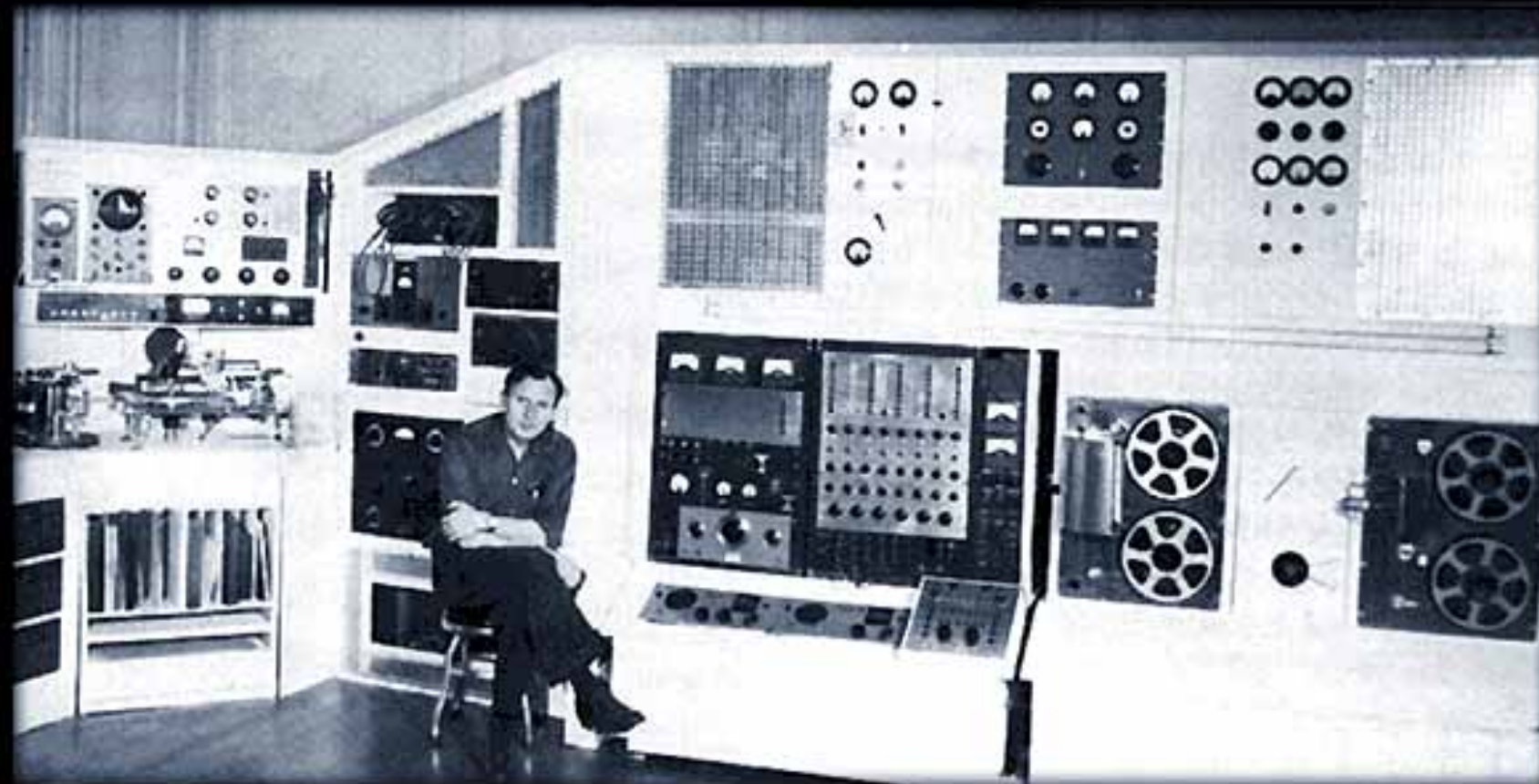
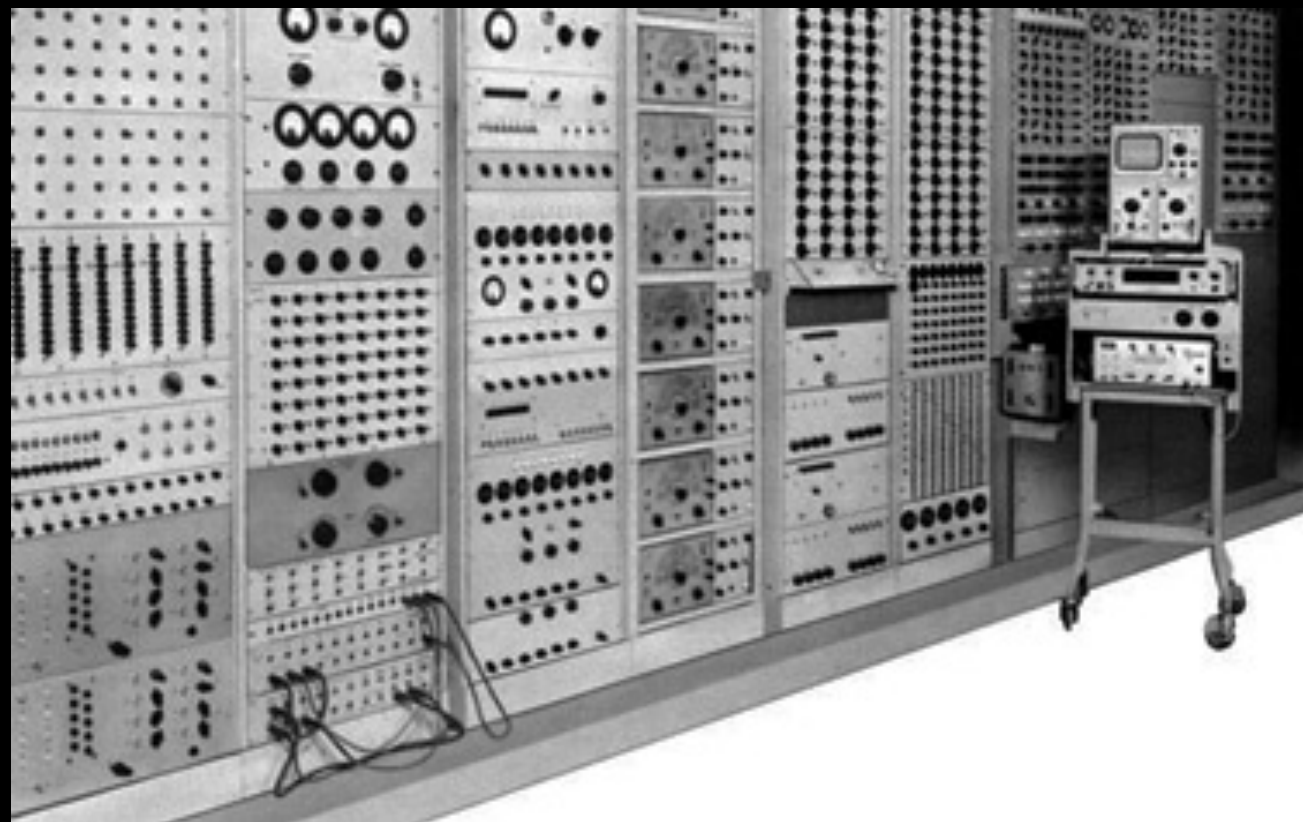
Main Title Overture

By Bebe & Louis Barron



Manhattan Research (est. 1946)

Raymond Scott



Over 6 feet high and covering 30 feet of wall space, the sequencer consisted of hundreds of switches controlling stepping relays, timing solenoids, tone circuits and 16 individual oscillators, and two tape recorders.



Columbia-Princeton Electronic Music Center (1958)

Piece for Tape Recorder (1956)

Vladimir Ussachevsky



I believe that the virtually unlimited source of sounds available to a composer who works with tape requires perhaps as great vigilance in selecting the proper material as would normally be exercised in determining an orchestral palette, if not greater. It is tempting to parade unusual sounds; and the structural unity of a composition can be seriously weakened by diverting attention with an overabundance of such sounds. To avoid creating these distractions in *A Piece for Tape Recorder*, I restricted my raw material to the following:

Non-electronic: a gong, a piano, a single stroke on a cymbal, a single note on a kettledrum, the noise of a jet plane, a few chords on an organ.

Electronic: four pure tones, produced on an oscillator, a tremolo produced by the stabilized reverberation of a click from a switch on a tape recorder.

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From Ussachevsky's Notes on *Piece for Tape Recorder*



BBC Radiophonic Workshop (1958)

Daphne Oram, Brian Hodgson, Delia Derbyshire, David Cain, and many more...

LOOK AT ORAMICS (1961)

Daphne Oram

Developed “Oramics” in 1959, a graphically controlled synthesizer.

Classically trained musician and BBC engineer.

Visited Schaeffer and RTF in Paris

Drawing Sounds





DOCTOR WHO THEME (1963)

Delia Derbyshire & Ron Grainer



OTHER IMPORTANT ELECTRONIC MUSIC CENTERS

Studio di Fonologia Musicale, Italy (1953)

Luciano Berio & Luigi Nono

Nippon Koso Kyokai (NHK) Japanese Broadcasting Corporation (1954)

Toshiro Mayuzumi & Toru Takemitsu