Historia de la Música Electroacústica

II
Los comienzos

de fines de la década de 1940 hasta ca. 1960

Studio D'Essai (Club D'Essai)

- 1942, Paris
- Pierre Schaeffer

Pierre Schaeffer

Pierre Schaeffer [1910-1995]

Cinq études de bruits - 1. Étude aux chemins de fer [1948]

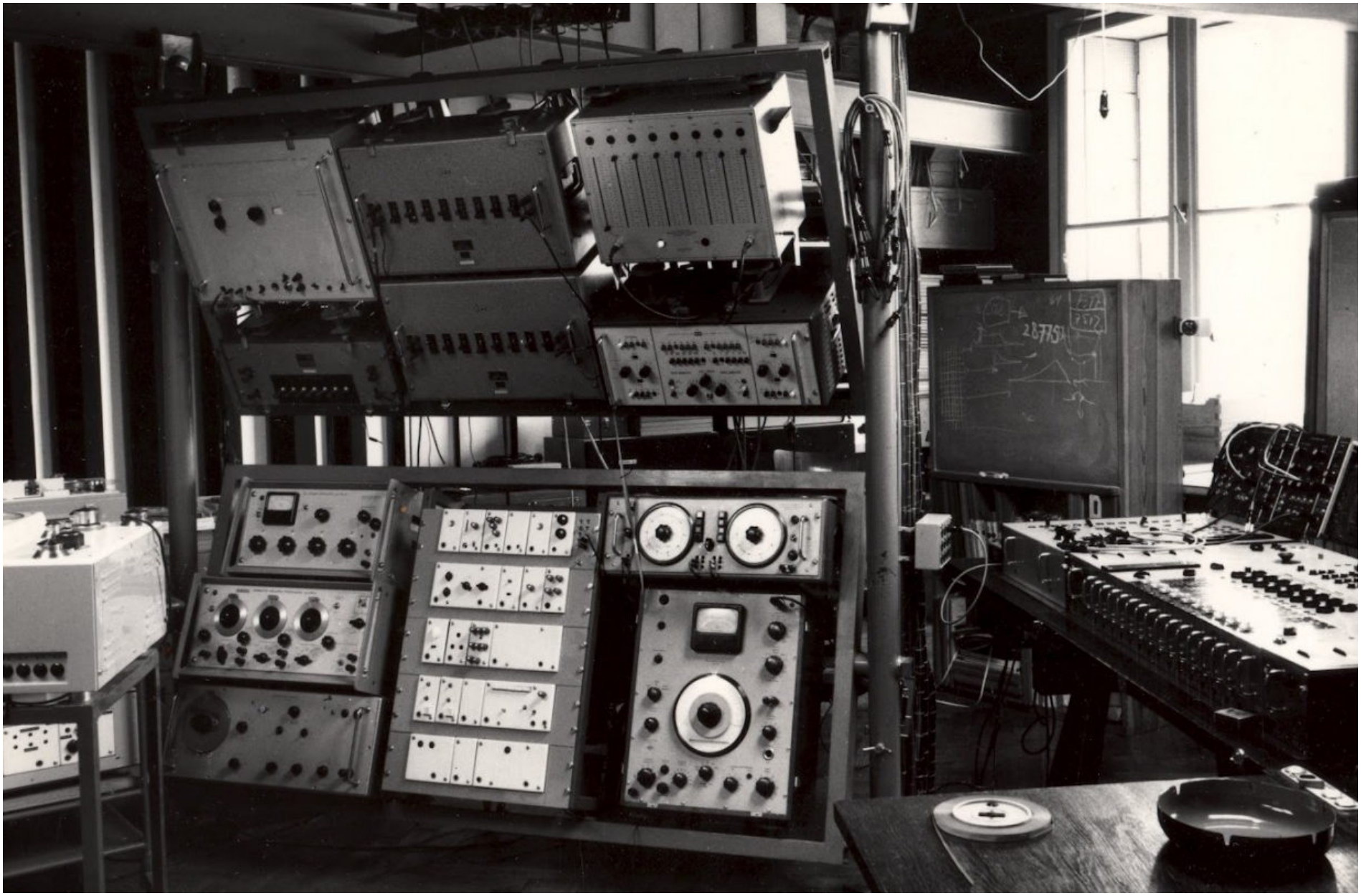
Pierre Henry

Pierre Schaeffer [1910-1995]
Pierre Henry [1927-]

Symphonie pour un homme seul - 1. Prospopée I [1950]

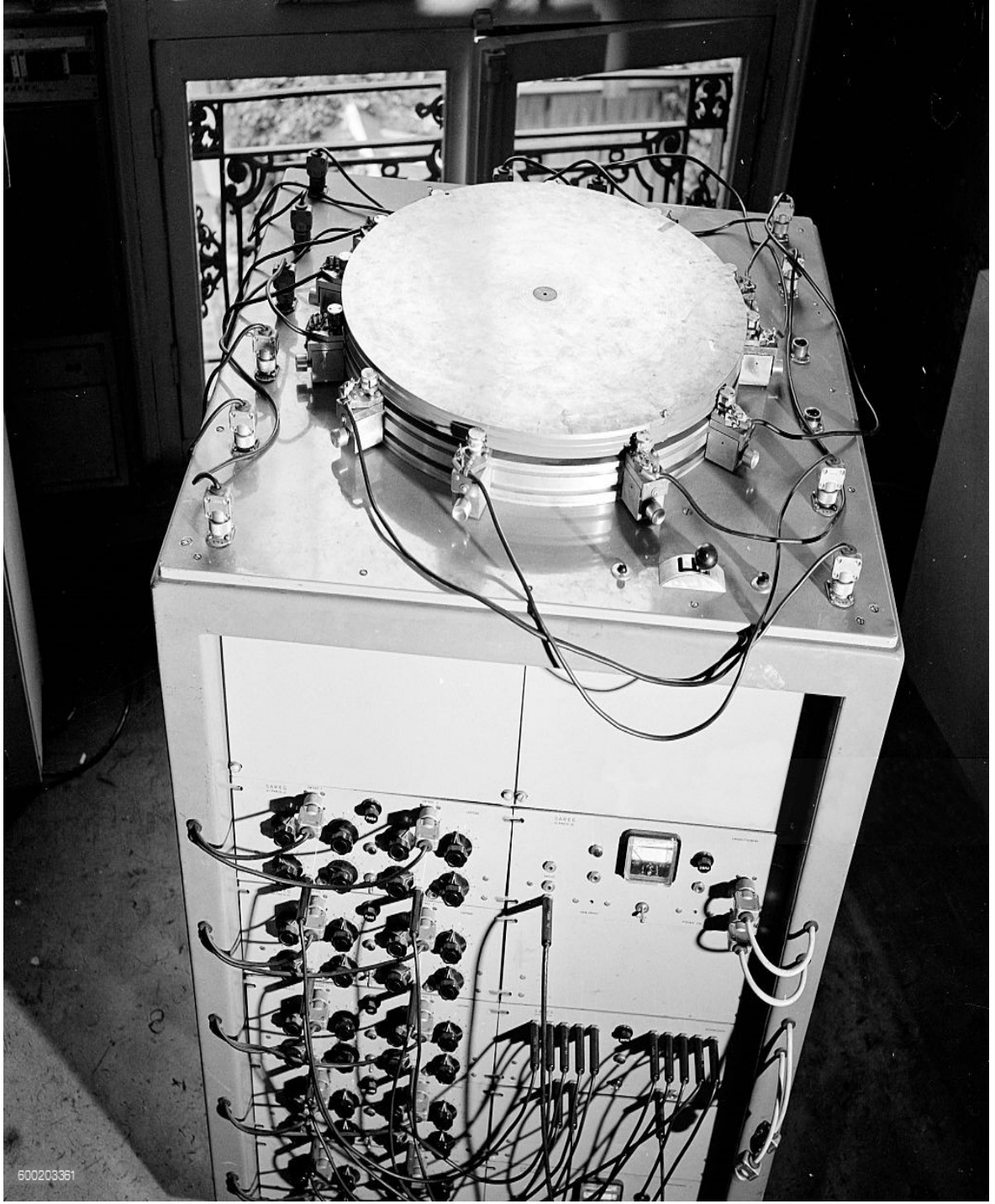
Groupe de Recherche de Musique Concrète - RTF

- 1951, Paris
- Pierre Schaeffer, Jacques Poullin, Pierre Henry
- 1958 Groupe de Recherche Musicale[s] (GRM)



Groupe de Recherches Musicales (GRM) – París

Phonogène à clavier



Morphophone

Pierre Henry [1927-]

Voile d'Orphée [1953]

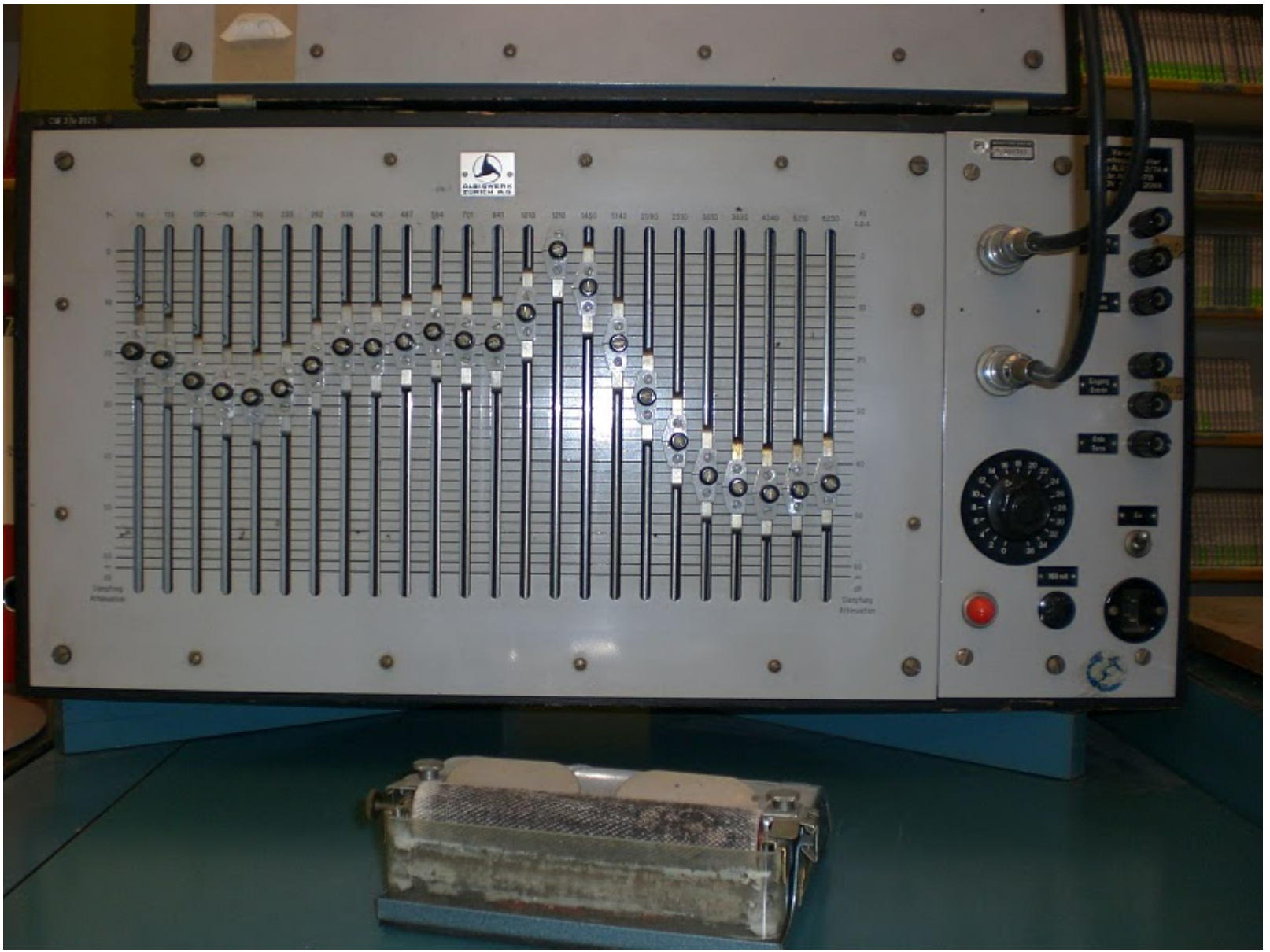
Karlheinz Stockhausen

Studio für Elektronische Musik - WDR

- 1951, Köln
- Herbert Eimert, Robert Beyer, Werner Meyer-Eppler

Studio für elektronische Musik des Westdeutschen Rundfunks – Colonia


Impulsdauer
x msek
Impulsfolge
x sek
Impulsdauer
x msek
Impulsfolge
x sek


ALBISWERK
ZÜRICH AG

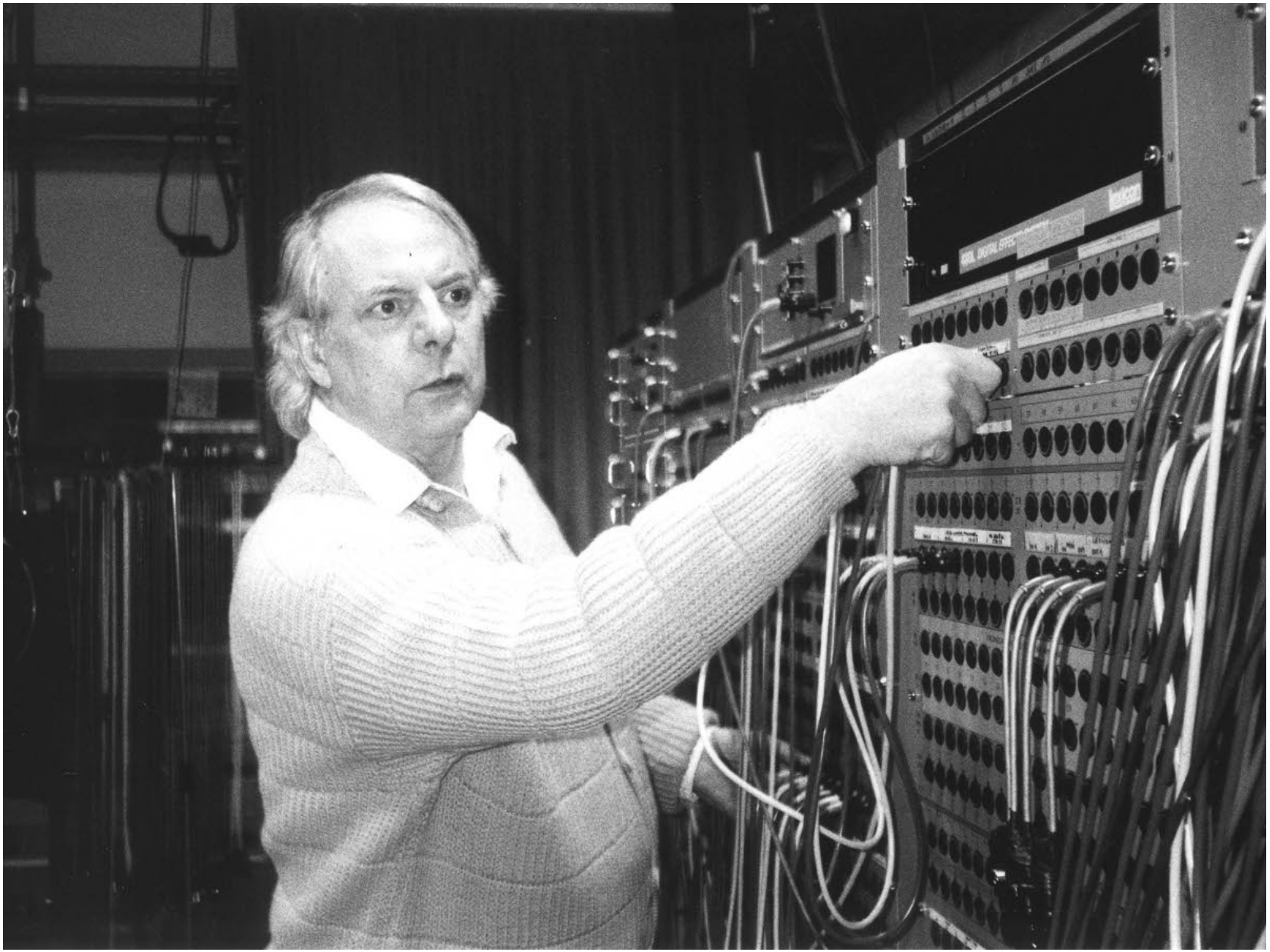

TELEFUNKEN


WDR 3
Das Studio für
Elektronische Musik des WDR 1956:
Umleitung, mehrspurig verwickelt
©WDR
Kopfhörer

Herbert Eimert [1897-1972]

Klangstudie I [1952]

Studio für Elektronische Musik - WDR



Karlheinz Stockhausen [1928-2007]

Studie I [1953]

Studio für Elektronische Musik - WDR

Table 1
(frequencies in Hz)

12 : 5	8 : 5	5 : 4			
4 : 5	5 : 12				
1920	800	1000	625	1500	1200
800	333	417	260	625	500
1000	417	521	325	781	625
625	260	325	203	488	390
1500	625	781	488	1170	937
1200	500	625	390	937	750
800	333	417	260	625	500
333	138	173	108	260	208
417	173	217	135	325	260
260	108	135	84	203	162
625	260	325	203	488	390
500	208	260	162	390	312
1000	417	521	325	781	625
417	173	217	135	325	260
521	217	271	169	407	325
325	135	169	105	254	203
781	325	407	254	610	488
625	260	325	203	488	390
625	260	325	203	488	390
260	108	135	84	203	162
325	135	169	105	254	203
203	84	105	66	158	127
488	203	254	158	381	305
390	162	203	127	305	244
1500	625	781	488	1170	937
625	260	325	203	488	390
781	325	407	254	610	488
488	203	254	158	381	305
1170	488	610	381	914	732
937	390	488	305	732	586
1200	500	625	390	937	750
500	208	260	162	390	312
625	260	325	203	488	390
390	162	203	127	305	244
937	390	488	305	732	586
750	312	390	244	586	469

Amplitudes

The series of proportions for the frequencies begin with notes which are themselves related to the original note (1920 Hz) through the series of ratios:

1920 Hz 800 Hz 1000 Hz 625 Hz 1500 Hz 1200 Hz
800 Hz
1000 Hz etc.
625 Hz
1500 Hz
1200 Hz

The initial notes of the series of proportions are to be regarded as of equal importance. Therefore they have the same amplitude. I have characterised the sixfold increasing displacement from the initial notes, effected through the series of proportions, by a constant difference in amplitude (4 dB), so that when coupled with amplitudes, the frequencies appear as follows:
(n dB = as yet undefined maximum amplitude)

1920 Hz n dB	800 Hz n dB	1000 Hz n dB
800 Hz n–4 dB	333 Hz n–4 dB	417 Hz n–4 dB
1000 Hz n–8 dB	417 Hz n–8 dB	etc.
625 Hz n–12 dB	etc.	
1500 Hz n–16 dB	(compare with *Table 1*)	
1200 Hz n–20 dB		

The loudest component of the note-groups below results from the above amplitude relationships of the frequency sequences. Thus the amplitude relationships in the first 6 groups are:

k_1 **Group 4**

1920 Hz n dB
800 Hz n–4 dB
1000 Hz n–8 dB
625 Hz n–12 dB

k_2 **Group 5**

800 Hz n dB
333 Hz n–4 dB
417 Hz n–8 dB
1500 Hz n–16 dB
1200 Hz n–20 dB

k_3 **Group 3**

260 Hz n dB
625 Hz n–4 dB
500 Hz n–8 dB

k_4 **Group 6**

1000 Hz n dB
417 Hz n–4 dB
521 Hz n–8 dB
325 Hz n–12 dB
781 Hz n–16 dB
625 Hz n–20 dB

k_5 **Group 2**

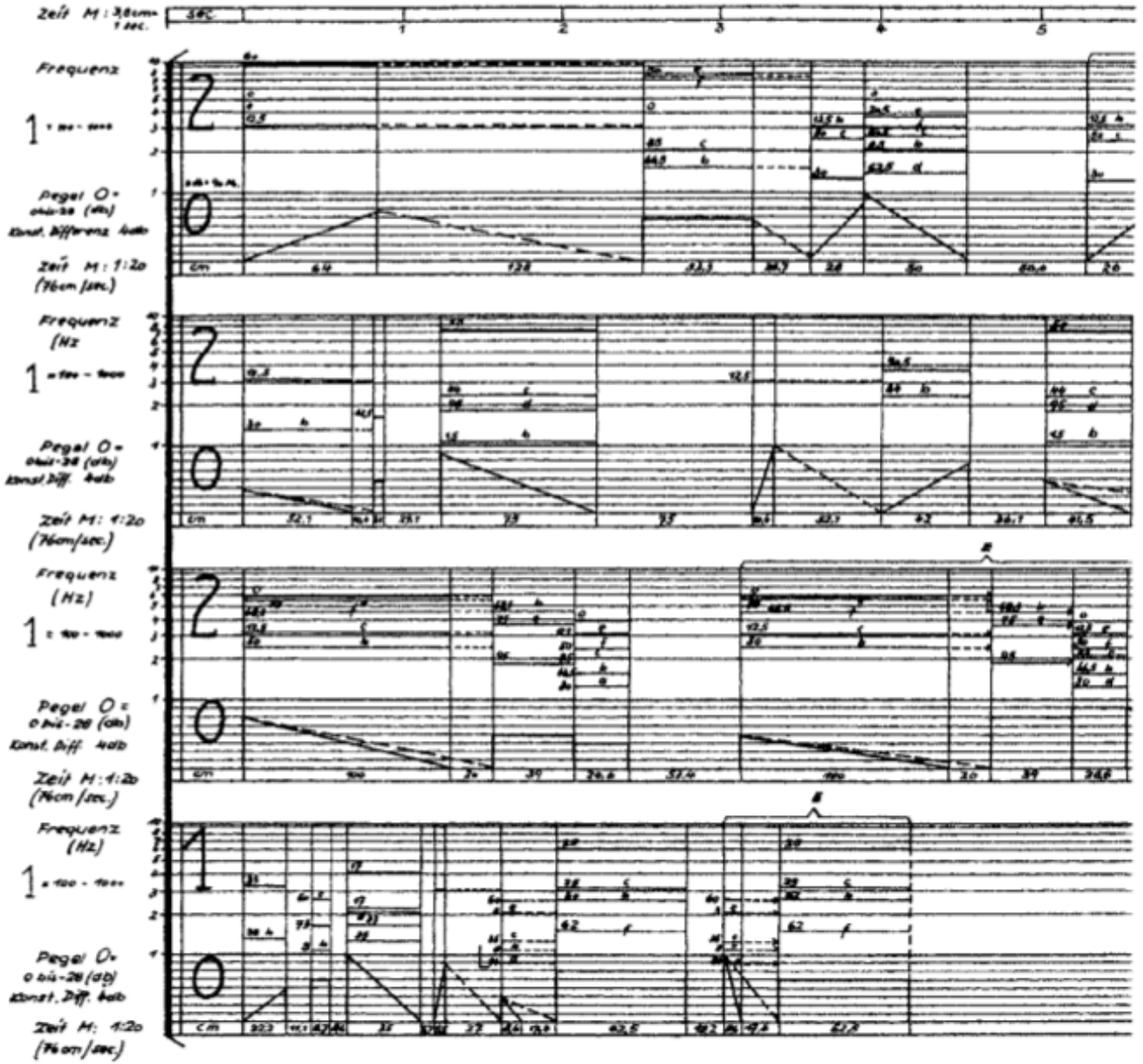
625 Hz n dB
260 Hz n–4 dB

k_6 **Group 1**

325 Hz n dB

During the course of the piece the complete sequence of frequencies (see *Table*) is used six times over. Each time through, the definition of the loudest frequency component in the series of six is varied, so that each frequency once becomes the loudest constituent note.

Partitur STUDIE I, Seite 1 / Score of STUDIE I, page 1



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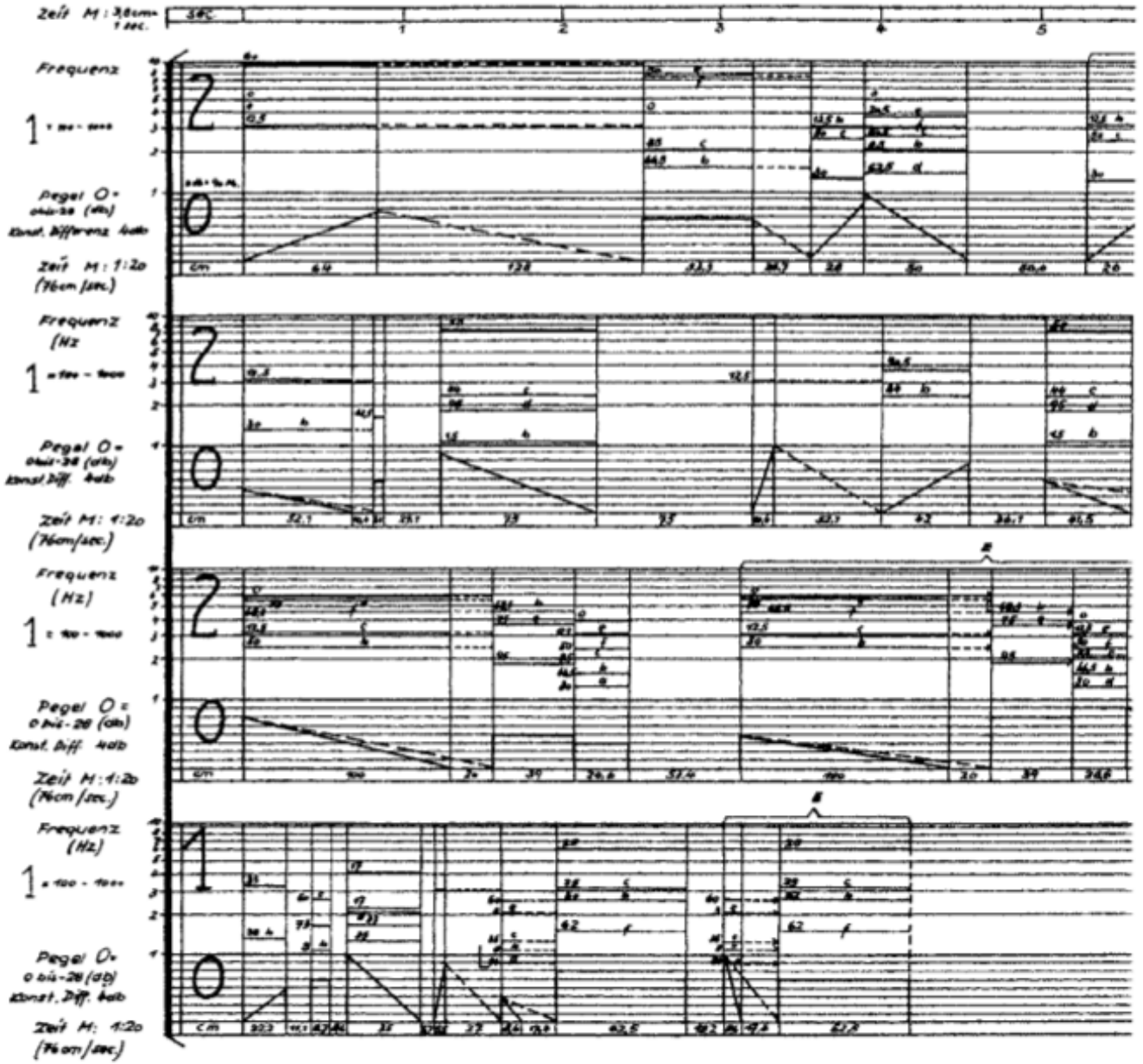
Partitur STUDIE I, Seite 1 / Score of STUDIE I, page 1



Karlheinz Stockhausen [1928-2007]

Studie II [1954]

Estudio WDR de Colonia

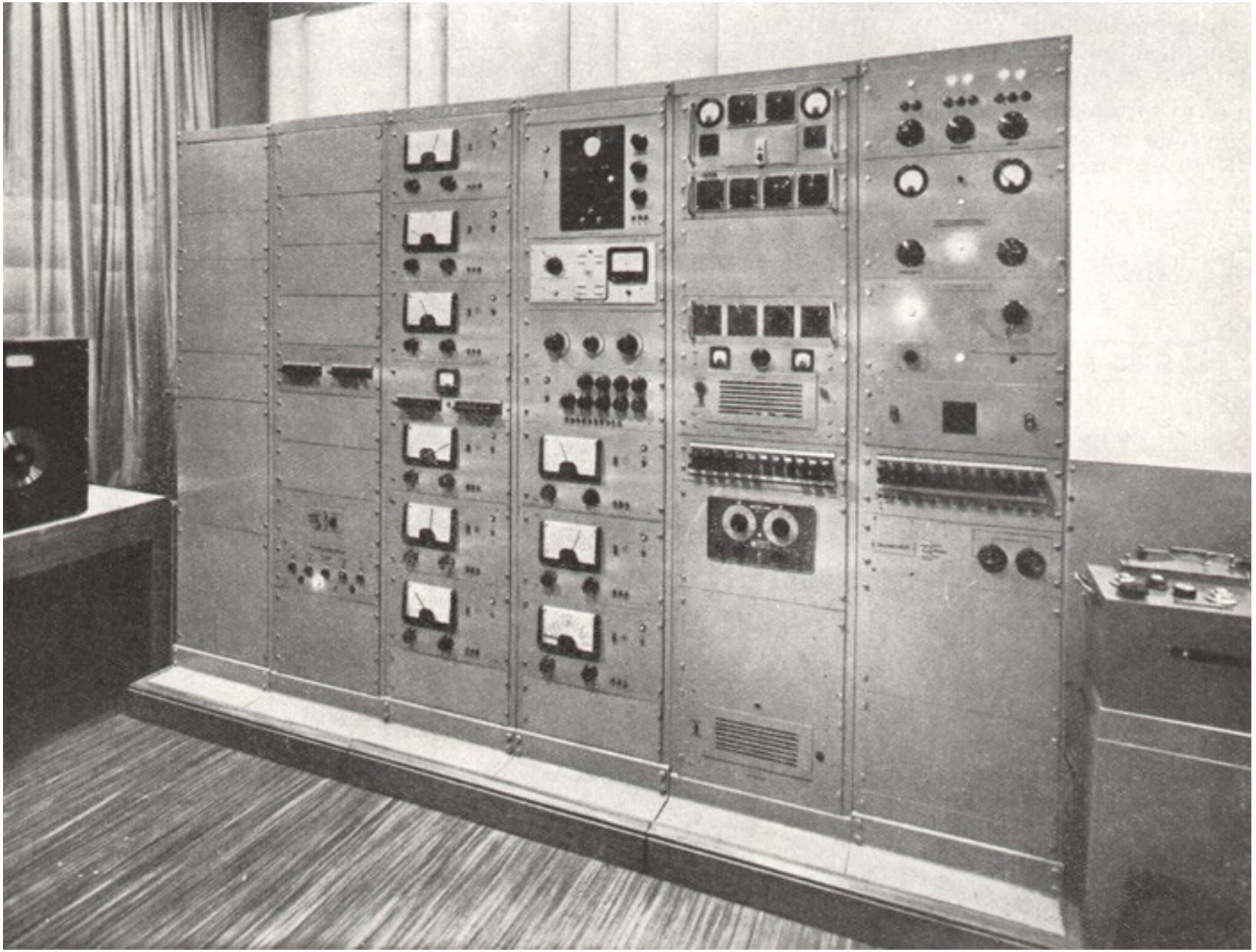
Karlheinz Stockhausen [1928-2007]

Gesang der Jünglinge [1955-56]

Studio für Elektronische Musik - WDR

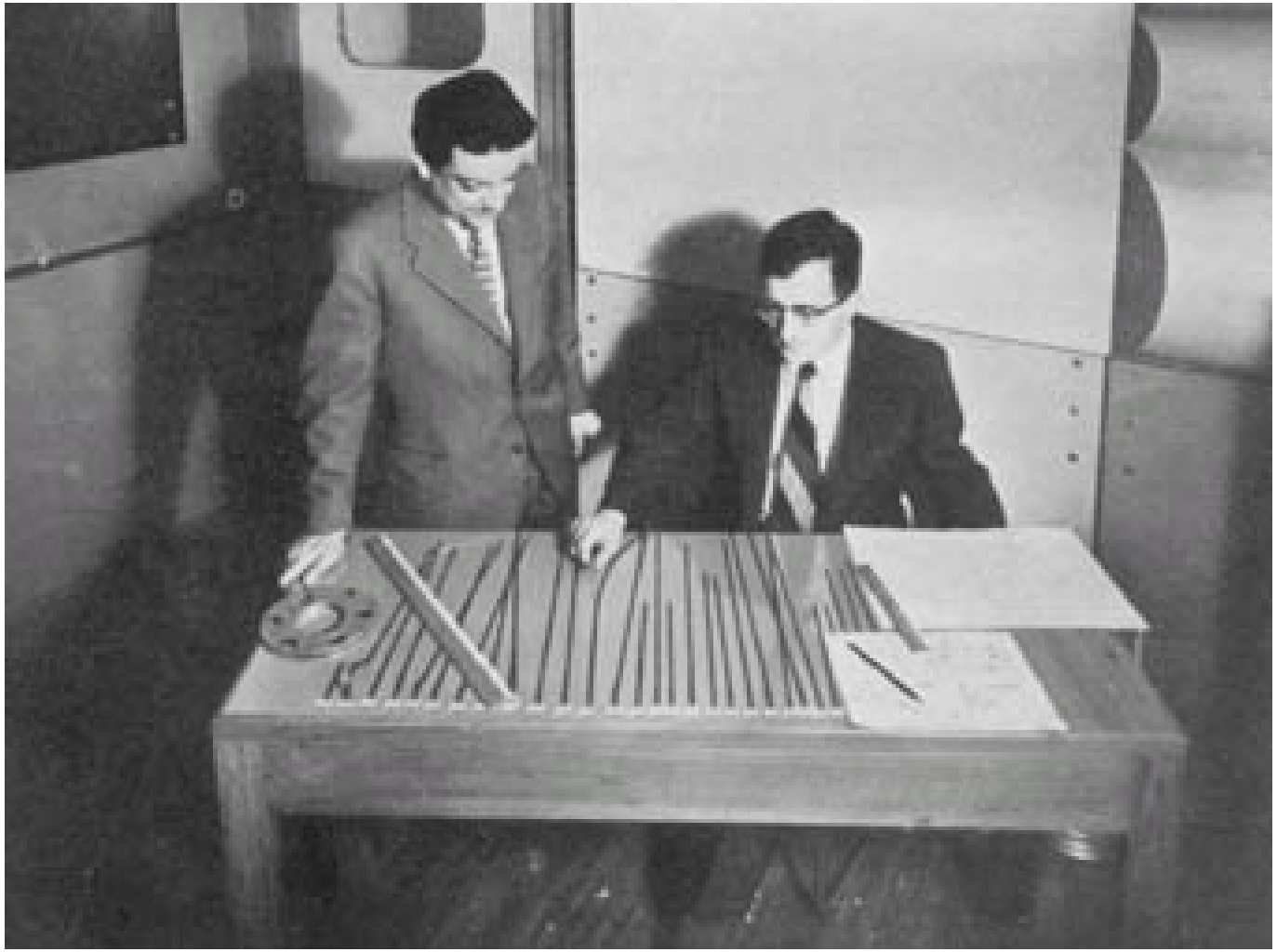
Studio di Fonologia - RAI

- 1953, Milano
- Bruno Maderna, Luciano Berio

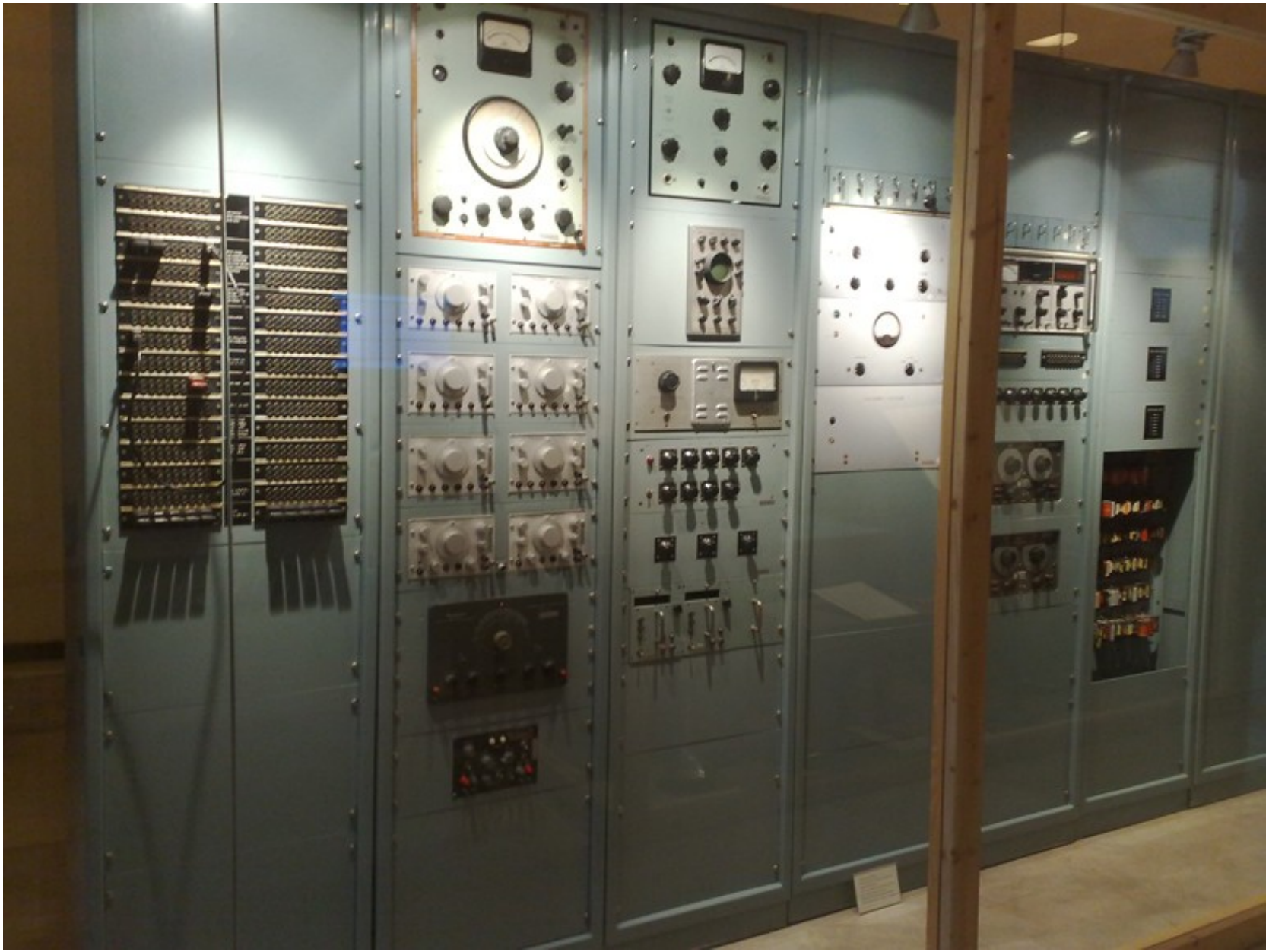


Studio di Fonologia Musicale RAI – Milán

Studio di Fonologia Musicale RAI – Milán



Bruno Maderna, Luciano Berio



Luciano Berio [1925-2003]

Thema (Ommagio a Joyce) [1958]

Studio di fonologia musicale di Radio Milano

Luigi Nono [1924–1990], estudio de la RAI

Studio für Elektronische Musik - Siemens

- 1957, München

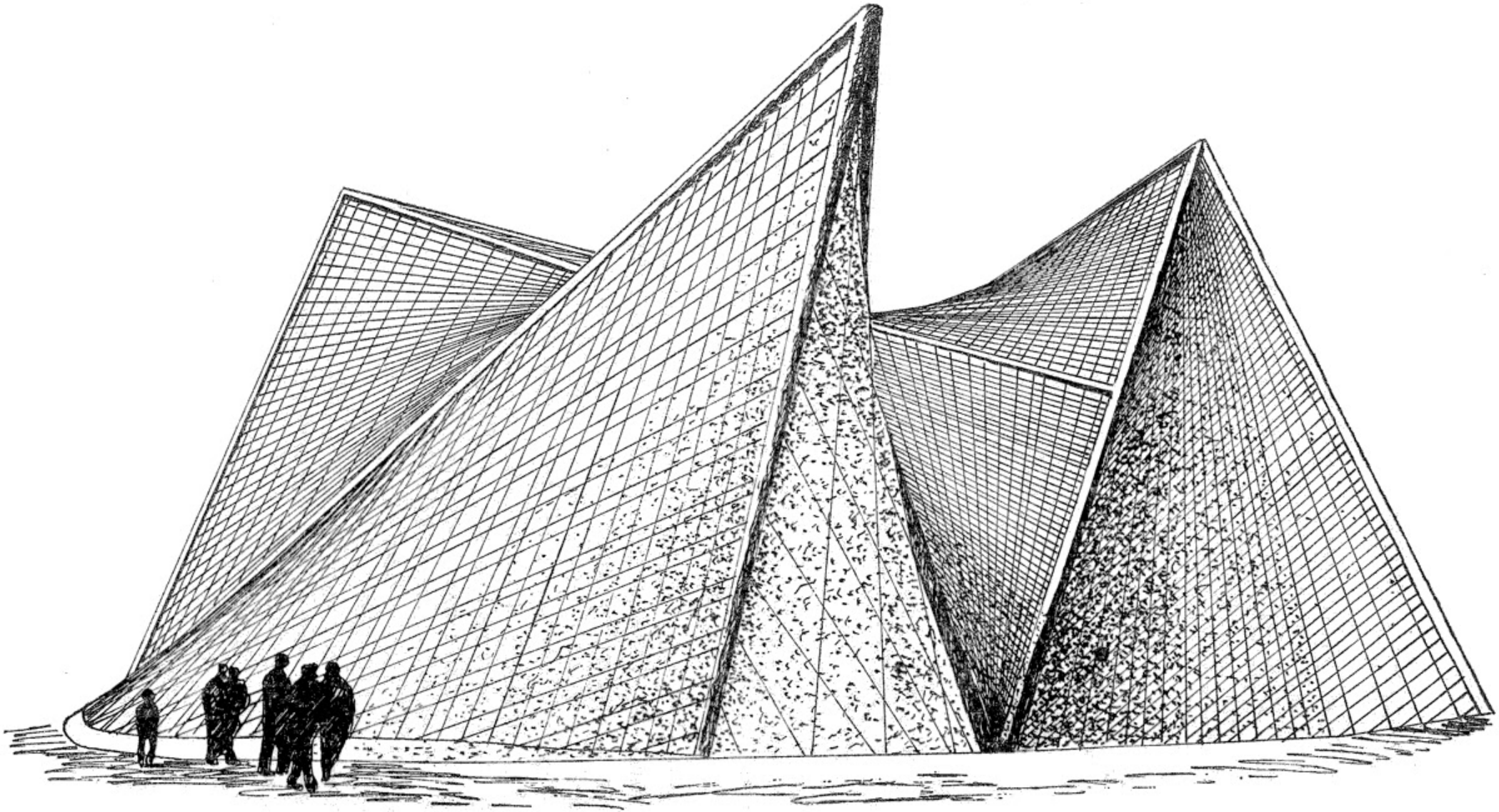
- 1951 - París, Francia: GRM (Groupe de Recherches Musicales) - RTF
- 1951 - Colonia, Alemania: Studio für Elektronische Musik - WDR
- 1953 - Milán, Italia: Studio di Fonologia - RAI
- 1953 - Tokio, Japón: Electronic Music Studio - NHK
- 1956 - Eindhoven, Holanda: Philips Research Laboratories
- 1957 - Londres, UK: Radiophonic Workshop - BBC
- 1957 - Varsovia, Polonia: Studio Eksperymentalne - Radio Nacional de Polonia
- 1957 - Munich, Alemania: Studio für Elektronische Musik - Siemens
- 1958 - Buenos Aires, Argentina: Estudio de Fonología Musical - Fac. de Arquitectura, UBA

Edgard Varèse [1983-1965]

Poème électronique [1958]

Studio Philips Research Laboratories Eindhoven

Pabellón Philips, Feria Mundial de Bruselas, 1958



Pabellón Philips, diseño de Iannis Xenakis

Iannis Xenakis [1922-2001]

Concret PH [1958]

Studio Philips Research Laboratories Eindhoven

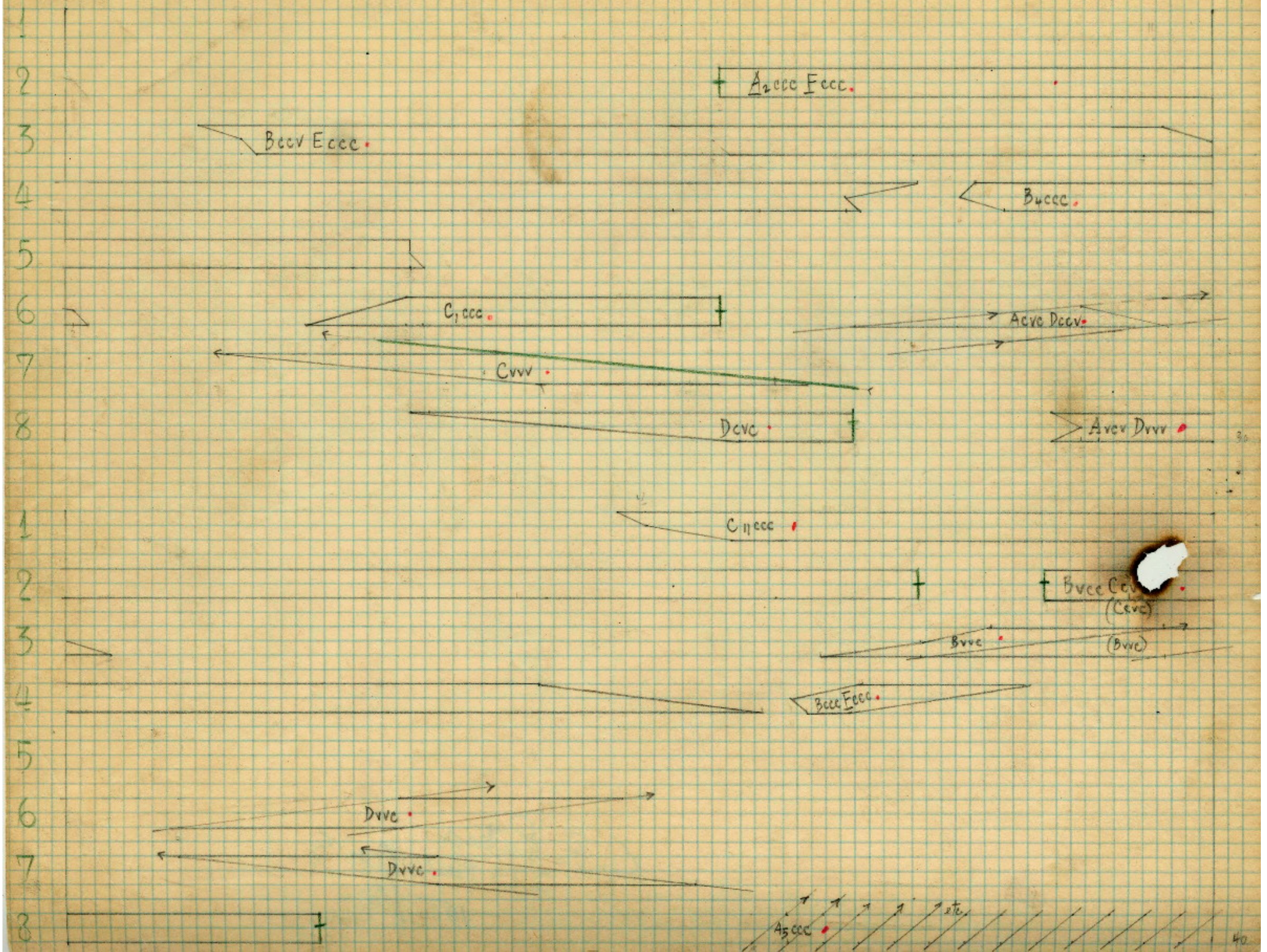
Estudio de Louis y Bebe Barron

- 1949, New York
- 1950-52 [?]: *Heavenly Menagerie*

John Cage [1912-1992]

Williams Mix [1952]

con la asistencia de Earle Brown, Louis and Bebe Barron,
David Tudor, Ben Johnston, y otros


A2ccc Fccc.
Bccv Eccc.
Bvccc.
C1ccc.
Acvc Dccv.
Cvvv.
Dcvc.
Avcv Dvvv.
C11ccc.
Bvcc Cc
(Cevc)
Bvvc.
(Bvvc)
Bcc Fccc.
Dvvc.
Dvvc.
A5ccc.
etc.

Bebe Barron [1925-2008]
Louis Barron [1920-1989]

banda de sonido de la película *Forbidden Planet* [1956]
A ShangriLa in the Desert Garden with Cuddly Tiger

STARRING WALTER PIDGEON · ANNE FRANCIS · LESLIE NIELSEN

WITH WARREN STEVENS AND INTRODUCING ROBBY THE ROBOT

BASED ON A STORY BY IRVING BLOCK AND ALLEN ADLER

SCREEN PLAY BY CYRIL HUME

PHOTOGRAPHED IN EASTMAN COLOR

DIRECTED BY FRED McLEOD WILCOX · PRODUCED BY NICHOLAS NAYFACK

IN CINEMASCOPE AND COLOR

A METRO-GOLDWYN-MAYER PICTURE

Columbia-Princeton Electronic Music Center

- comienzos de la década de 1950, New York
- Vladimir Ussachevsky, Otto Luening (Columbia)
  Milton Babbitt, Roger Sessions (Princeton)

Otto Luening [1900-1996]

Low Speed [1952]

Columbia-Princeton Electronic Music Center

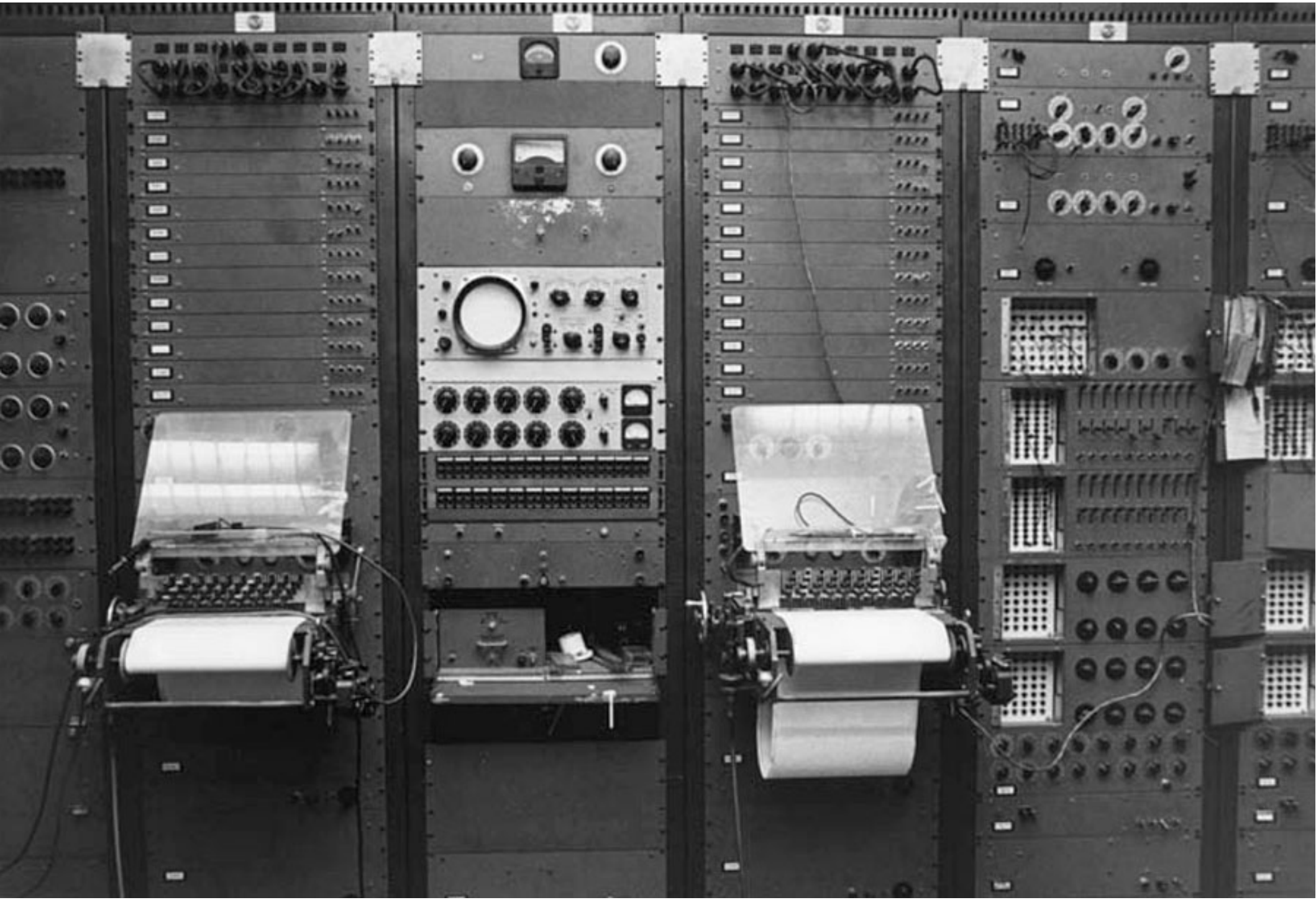
Vladimir Ussachevsky [1911-1990]

Sonic Contours [1952]

Columbia-Princeton Electronic Music Center

Columbia-Princeton Electronic Music Center

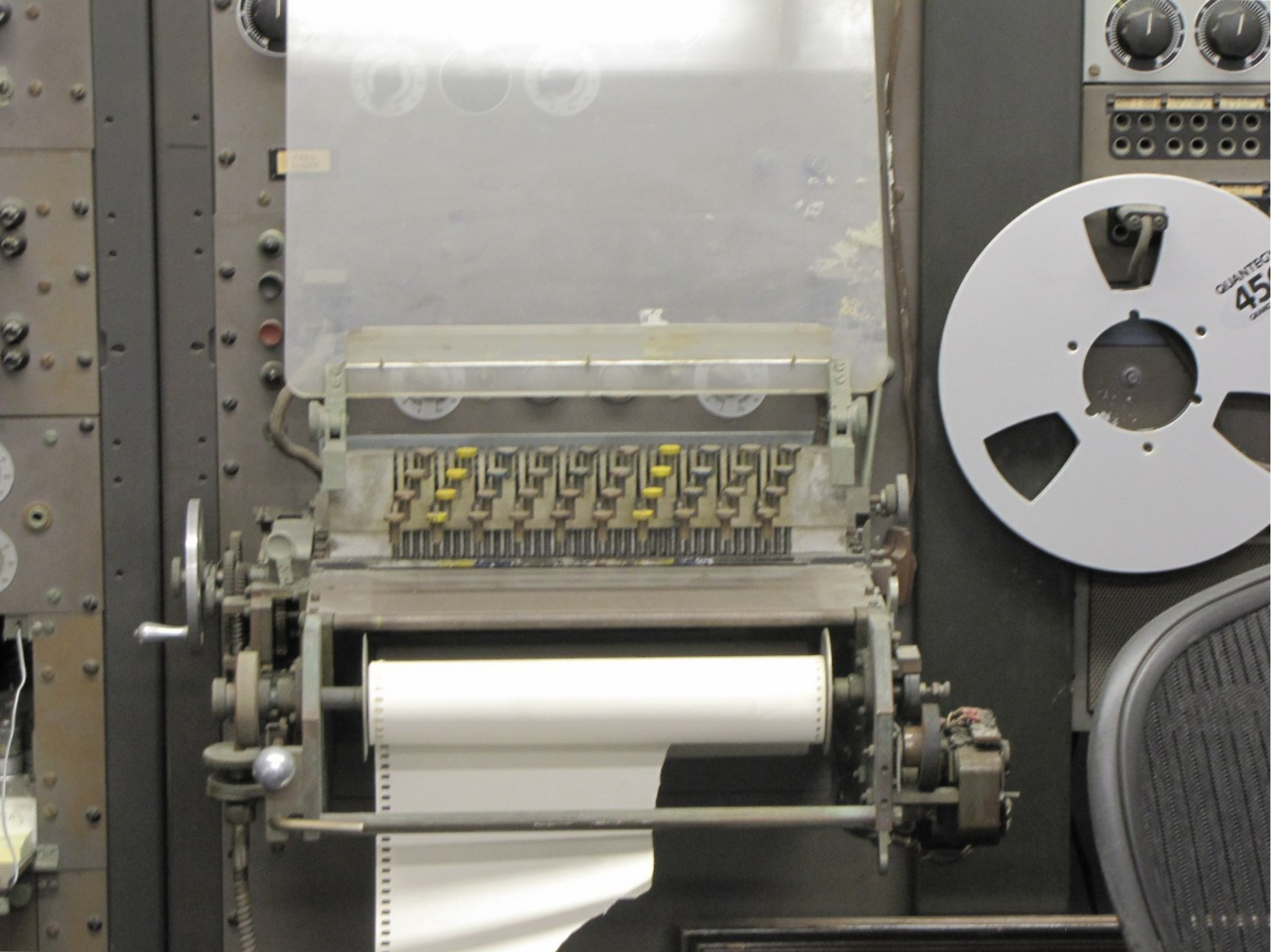
- 1958: RCA Mark II Sound Synthesizer (Harry Olsen - Hebert Belar)



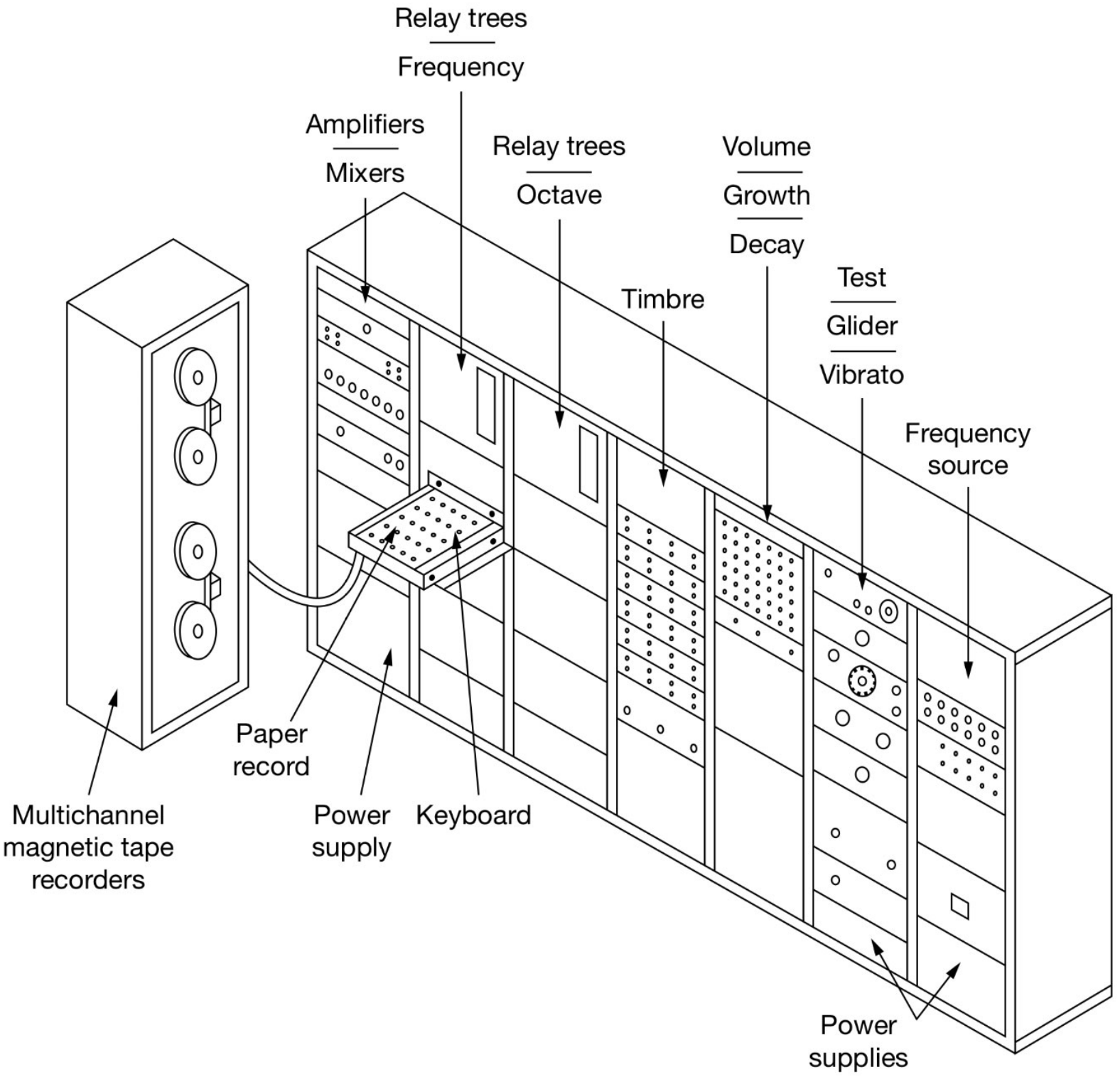
Milton Babbit [1916–2011], estudio Columbia–Princeton


DELL
Coke


AUDIO
ENGINEERING




DO NOT TURN ON
Use ONLY the right-hand switch to use the tape recorders, loudspeakers, and final mixer.
OSCILLOSCOPE MODEL 122AR
FOCUS
INTENSITY
POWER OFF
SCALE LIGHT
VERTICAL POSITION
HORIZ POSITION
CHANNEL A POLARITY
POS. UP
NEG. UP
VERT. PRESENTATION
CHOP
ALT.
TRIGGER LEVEL
SYNC.
INT-
LINE
INT+
EXT.
AUTO
MASTER
COMBINE A AND B
ON
AMP PWR
TEST
OFF


Relay trees
Frequency
Amplifiers
Mixers
Relay trees
Octave
Volume
Growth
Decay
Timbre
Test
Glider
Vibrato
Frequency source
Paper record
Multichannel magnetic tape recorders
Power supply
Keyboard
Power supplies

Milton Babbitt [1916-2011]

Vision and Prayer [1961]
for soprano and synthesized tape

sobre un poema de Dylan Thomas

Columbia-Princeton Electronic Music Center