

### **An (Incomplete) Electronic Music History Timeline**

1857 – Phonautograph (precursor to the phonograph/gramophone), Édouard-Léon Scott de Martinville, France. Phonograph/Gramophone NOT electric, purely mechanical

1861 – First electric microphone and loudspeaker (in telephone), Johann Philip Reis, Germany. Soon after further developed by Alexander Graham Bell in USA.

1867 – Electromechanical Piano, Matthias Hipp, Switzerland

1877 – Carbon microphone, independently developed by David Edward Hughes in England and Emile Berliner and Thomas Edison in the US.

1894 – radio transmitter/receiver, Guglielmo Marconi, Italy

1897 – Telharmonium/Dynamophone, Thaddeus Cahill, USA

1920s – electrical recording using electrical microphones

1920s – optical recording, sound-on-film

1928 – Theremin, Léon Theremin, Soviet Union/USA

1928 – Ondes Martenot, Maurice Martenot, France

1928 – Magnetic tape, Fritz Fleumer, Germany (based on magnetic wire recording by Oberlin Smith in 1888 and Valdemar Poulsen in 1898)

1929 – *Piatiletka: The Plan of the Great Works*, drawn sound on film, Arseny Avraamov, Moscow

1930(?) – *Journey No. 1*, Jack Elliott, London (using sound-on-film and drawn sound, early 1930s)

1931 – Drawn sound on film, Oskar Fischinger, Berlin

1933 – Trautonium, Friedrich Trautwein, Berlin

1934 – Hammond organ, Laurens Hammond, USA

1939 – *Imaginary Landscape No. 1*, John Cage, USA

1942-1952 – RTF Studio (or Club) d'essai, Pierre Schaeffer, Paris

1944 – *The Expression of Zaar*, Halim El-Dabh, tape music, Cairo

1948-1951 – Bell labs vocoder – speech experiments, Werner Meyer-Eppler, Herbert Eimert, Cologne

1948 – AMPEX 200 tape recorder, John T. Mullin & Bing Crosby, USA

1949-1956 – Chamberlin tape organ, Harry Chamberlin, USA

1950 – Jikken Kōbō (Experimental Workshop), collective partnered with Sony, Tokyo

1950 – CSIRAC digital computer used to play music, Geoff Hill and others, Melbourne

1949 – First electronic music studio in USA, Louis & Bebe Barron, NYC; Tape recorders, ring modulator, reverb; *Heavenly Menagerie* (1950), *Forbidden Planet* soundtrack (1956), USA

1950s – Free Music Machines, Percy Grainger, Melbourne

1950s – development of graphical sound-on-film by Norman McLaren, Evelyn Lambart, and Maurice Blackburn, Montreal

1952 – Groupe de Recherche de Musique Concrète, Pierre Schaeffer with Pierre Henry and others, Paris

1952 – Bruno Moderna, Acoustic instruments and electronic sounds, Cologne

1953 – strict serialism, “Elektronische Musik”, “Pure electronic music”, Karel Goeyvaerts and Karlheinz Stockhausen, Cologne

1953 – *William's Mix*, *Music for Magnetic Tape*, John Cage, Morton Feldman, Earle Brown, NYC

1953 – *Œuvre pour Musique Concrète x, y, z*, Toshiro Mayuzumi, produced at Nippon Cultural Broadcasting, Japan

1954 – Studio di Fonologia in Milan

1955 – NHK Electronic Music Studio, Tokyo

1957 – BBC Radiophonic Workshop, Daphne Oram, London

1957 – *Illiac Suite/String Quartet No. 4*, Lejaren Hiller and Leonard Issacson, first score algorithmically composed by an electronic computer, Illinois, USA

1957 – MUSIC (program for sound production with digital computer), Max Matthews at Bell Labs, New Jersey

1959 – Columbia-Princeton Electronic Music Center, Vladimir Ussachevsky, Otto Luening, Milton Babbitt, Roger Sessions, NYC

1959 - *Analogique A-B*, Iannis Xenakis, first use of granular synthesis, Greek/French

1963 – San Francisco Tape Music Center, Morton Subotnik, Pauline Oliveros, and others, California

1963 – Mellotron tape sampler, England

1969 – Digital sampling on EMS Musys system, Peter Grogono, David Cockerell, and Peter Zinovieff, London

1969 – Electronic Music Studio, National Institute of Design, Gita Sarabhai and David Tudor, Ahmedabad, India

1960s – FM Synthesis developed by John Chowning, Stanford, CA

1978 – Soundstream's Digital Editing System, first DAW, Salt Lake City, USA

1979 – Fairlight CMI digital synthesizer and sampler, Australia

1982 – MIDI, developed by Roland, Yamaha, Korg, Kawai, and Sequential Circuits

1983 - Yamaha DX7 digital synthesizer, first widely used digital synth/synth capable of FM synthesis, Japan

1986 – *Riverrun*, Barry Truax, early piece created using real-time granular synthesis, Vancouver, Canada

And of course, history continued and continues