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# Early Electronic Music Instruments: Time Line 1899–1950

The study of electronic music history helps us appreciate the fascinating instruments created by visionary musical engineers. The size and pace of development of the present music industry makes it easy to forget how many instruments were invented in the first half of the 20th century. Some accounts of this period leave the impression that there was little development of electronic music before the cataclysm of World War II. This time line shows that development was incessant, even if it was often relegated to the sidelines of official musical life. Most electronic music inventors labored against the grain of a conservative musical establishment. The business climate for electronic instruments was immature, and sometimes, as in the case of Theremin, for example, the political circumstances were dangerous.

The first column in the time line names each instrument. The dates in the second column indicate each instrument's first public demonstration,

rather than the date of its earliest conception. Every attempt has been made to be precise and comprehensive, but a few uncertainties remain. In some cases, for example, the precise date is not clear from the sources consulted, or different sources conflict. Corrections or additions to this list are welcome.

The time line terminates at 1950. Prior to this date almost all instruments were designed for live performance. The full compositional implications of electronic sound were not always understood by most musicians (with the notable exceptions of Edgard Varèse and John Cage). After 1950 a page of music history turned with the birth of composition theories such as *elektronische musik*, *musique concrète*, and "tape music," and the merging of electronic music technology with studio techniques of recording, editing, mixing, and sound transformation. To this epoch belongs another time line.

**Table 1. Electric and electronic musical instruments: 1899–1950**

<i>Instrument</i>	<i>Date of Demonstration</i>	<i>Inventor/Notes</i>
Singing Arc	1899	W. Duddell/early electric keyboard instrument
Choralcello electric organ	1903	Farrington, C. Donahue, and A. Hoffman/electromagnetic instrument
Telharmonium	1906	T. Cahill/rotating tone generators, massive synthesizer
Audio oscillator and Audion piano	1915	L. De Forest/first vacuum-tube instrument
Synthetic Tone musical instrument	1918	S. Cabot/rotating tone wheels to generate current, which drove metallic resonating bars
Theremin	1920	L. Theremin/antenna instrument played with hands in air, based on heterodyne tone generator
Electrophon	1921	J. Mager/heterodyne tone generator with filter
Staccatone	1923	H. Gernsback/sharp attack, inductance-controlled keyboard instrument
Sphaerophon	1926	J. Mager/improved Electrophon with keyboard
Electric Harmonium	1926	L. Theremin/1,200 divisions per octave
Pianorad	1926	H. Gernsback/polyphonic, based on vacuum-tube oscillators
SuperPiano	1927	E. Spielmann/"Light-chopper" instrument
Electric guitar prototype	1927	Les Paul/solid-body construction with electromagnetic pickups
Electronic violin	1927	E. Zitzmann-Zirini/space control of pitch similar to the Theremin, but switched control of volume
Spielman electric piano harp	1928	J. Bethenod/microphone and speaker feedback to sustain oscillations
Ondes Martenot	1928	M. Martenot/first of many versions
Dynaphon	1928	R. Bertrand/multivibrator oscillator
Hellertion	1929	B. Helberger and P. Lertes/vacuum-tube oscillator with feedback; continuous linear controllers
Crea-tone	1930	S. Cooper/electric piano with feedback circuits for sustain
Givelet-Coupleaux organ	1930	J. Givelet and E. Coupleaux/automated additive synthesis; oscillators controlled by paper tape
Trautonium	1930	F. Trautwein/neon-tube sawtooth tone generators; resonance filters to emphasize formants
Magnetoelectric organ	1930	R. H. Ranger
Westinghouse organ	1930	R. Hitchcock/research instrument based on vacuum-tube oscillators
Ondium Pechadre	1930	? /Theremin-like instrument with a volume key instead of antenna
Hardy-Goldwaithe organ	1930	A. Hardy and S. Brown/electro-optical tone generators
Radiopiano	1931	L. Hiller/amplified piano
Trillion-tone organ	1931	A. Lesti and F. Sammis/electro-optical tone generators
Radiotone	1931	Bureau/string-induced radio-receiver tone generator with filter circuits
Rangertone organ	1931	R. Ranger/rotating tone wheels
Emicon	1932	N. Langer and Hahnagyi/gas-discharge tube oscillator, controlled by keyboard
Gnome	1932	I. Eremeef/rotating electromagnetic tone wheels

**Table 1. Electric and electronic musical instruments: 1899–1950 (cont.)**

<i>Instrument</i>	<i>Date of Demonstration</i>	<i>Inventor/Notes</i>
Miessner electronic piano	1932	B. F. Miessner/88 electrostatic pickups
Rhythmicon	1932	H. Cowell, L. Theremin, B. Miessner/complex rhythm machine
Mellertion	1933	? /10-division octave
Electronde	1933	L. or M. Taubman/battery-powered, space control of pitch like the Theremin, with volume pedal
Cellulophone	1933	P. Toulon/electro-optical tone generators
<i>Elektroakustische orgel</i>	1934	O. Vierling and Kock/12 vacuum-tube master oscillators; other pitches derived by frequency division
La Croix Sonore	1934	N. Oboukhov/heterodyning oscillator
Ethonium	1934	G. Blake/emulation of the Theremin heterodyne oscillator
Keyboard Theremin	1934	L. Theremin/bank of tone generators controlled by traditional organ keyboard
Loar Vivatone	1934	L. Loar/a modified acoustic-electric guitar
Polytone	1934	A. Lesti and F. Sammis/electro-optical tone generators
Syntronic organ	1934	I. Eremeef and L. Stokowski/electro-optical tone generators; one-hour of continuous variation
Everett Orgatron	1934	F. Hoschke and B. Miessner/amplified vibrating brass reeds
Partiturphon	1935	J. Mager/five-voice Sphaerophon with three keyboards
Kaleidaphon	1939	J. Mager/"kaleidascope" tone mixtures
Hammond electric organ	1935	L. Hammond and B. Miessner/rotating tone generators
Photona	1935	I. Eremeef/12 electro-optical tone generators; developed at WCAU radio, Philadelphia
Variophone	1935	Y. Sholpo/photo-electric instrument
Electrone	1935	Compton Organ Company/based on design of L. Bourn; electrostatic rotary generators
Foerster Electrochord	1936	O. Vierling/electro-mechanical piano
Sonothèque	1936	L. Lavalée/coded performance instrument using photoelectric translation of engraved grooves
<i>"Kraft-durch-Freude"</i>	1936	O. Vierling and staff of Heinrich-Hertz-Institut, Berlin/played at 1936 Olympic games
Grosstonorgel		
Welte Light-Tone organ	1936	E. Welte/electro-optical tone generators
National Dobro Violectric violin and Supro guitar	1936	J. Dopyera/commercial instruments with electromagnetic pickups
Electric Hawaiian guitar	1936	L. Fender/commercial instrument with electromagnetic pickups
Singing keyboard	1936	F. Sammis/played electro-optical recordings, precursor of samplers
Warbo Formant organ	1937	H. Bode and C. Warnke/four-voice polyphonic; envelope shaping; key assignment; two filters
Oscillion	1937	W. Swann and W. Danforth/gas-discharge tube oscillator
Krakauer Electone	1938	B. F. Miessner/early electric piano
Melodium	1938	H. Bode/touch-sensitive solo keyboard
Robb Wave organ	c. 1938	M. Robb/rotating electromagnetic tone generators
Allen organ	1939	J. Markowitz/vacuum-tube oscillators
Neo Bechstein piano	1939	O. Vierling and W. Nernst/electric piano

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<i>Instrument</i>	<i>Date of Demonstration</i>	<i>Inventor/Notes</i>
Amplified piano	1939	B. Miessner/variable tonal quality depending on the position of the pickups
Novachord	1939	Hammond Company/several tube oscillators; divide-down synthesis; formant filters
Parallel Bandpass Vocoder	1939	H. Dudley, Bell Laboratories/analysis and cross-synthesis
Dynatone	1939	B. Miessner and A. Amsley/electric piano
Voder speech synthesizer	1939	H. Dudley/voice model played by a human operator
Violena	1940	W. Gurov
Emiriton	1940	A. Ivanov and A. Rimsky-Korsakov/neon-tube oscillators
Ekwodin	1940	A. Wolodin
Solovox	1940	L. Hammond/monophonic vacuum-tube oscillator with divide-downcircuitry
Univox	c. 1940	Univox Company/vacuum-tube sawtooth generator with diode waveform shaper circuit
Multimonika	1940	Hohner GmbH/lower manual is wind-blown, upper manual has sawtooth generator
Ondioline	1941	G. Jenny/multistable vibrator and filters; keyboard mounted on springs for vibrato
Melotone	c. 1941	Compton Organ Company/electrostatic rotary generators
Hanert Electrical Orchestra	1945	J. Hanert/programmable performance controlled by punched paper cards
Joergensen Clavioline	1947	M. C. Martin/monophonic, three-octave keyboard
Rhodes Pre-Piano	1947	H. Rhodes/metal tines amplified by electrostatic pickups
Wurlitzer electronic organ	1947	Wurlitzer Company/based on the Orgatron reed design
Conn organ	1947	Conn Organ Company/individual oscillators for each key
Electronic sackbut	1948	H. LeCaine/voltage-controlled synthesizer, pitch, waveform, and formant controllers
Free Music Machine	1948	B. Cross and P. Grainger/electronic oscillators and continuous automated control
Mixturtrautonium	1949	O. Sala/Trautonium with noise generator, "circuit-breaker" sequencer, frequency dividers
Heliophophon	1949	B. Helberger
Mastersonic organ	1949	J. Goodell and E. Swedien/rotating pitch wheels
Wurlitzer electronic piano	1949	Wurlitzer Company/based on patents by B. Miessner
Melochord	1947–1949	H. Bode/later installed at North West German Radio, Cologne
Bel organ	c. 1947	Bendix Electronics/12 vacuum-tube oscillators, other pitches obtained by divide-down circuit
Elektronium Pi	1950	Hohner GmbH/monophonic vacuum-tube oscillator with divide-downcircuitry
Radareed organ	1950	G. Gubbins/amplified reeds fitted with resonators
Dereux organ	c. 1950	Société Dereux/electrostatic rotary generators, waveforms derived from oscillogram photographs