

ELECTRONIC MUSIC

Definitions

Electronic music refers to music that emphasizes the use of electronic musical instruments or electronic music technology as a central aspect of the sound of the music.

Basics

Electronic music refers to music that emphasizes the use of electronic musical instruments or electronic music technology as a central aspect of the sound of the music. Historically electronic music was considered to be any music created with the use of electronic musical instruments or electronic processing, but in modern times, that distinction has been lost because almost all recorded music today, and the majority of live music performances, depends on extensive use of electronics. Today, the term electronic music serves to differentiate music that uses electronics as its focal point or inspiration, from music that uses electronics mainly in service of creating an intended production that may have some electronic elements in the sound but does not focus upon them.

Contemporary electronic music expresses both art music forms including electronic art music, experimental music, *musique concrète*, and others; and popular music forms including multiple styles of dance music such as techno, house, trance, electro, breakbeat, drum and bass, industrial music, synth pop, etc.

A distinction can be made between instruments that produce sound through electromechanical means as opposed to instruments that produce sound using electronic components.

Examples of electromechanical instruments are the teleharmonium, Hammond B3, and the electric guitar, whereas examples of electronic instruments are a Theremin, synthesizer, and a computer.

History

Late 19th century to early 20th century

Before electronic music, there was a growing desire for composers to use emerging technologies for musical purposes. Several instruments were created that employed electromechanical designs and they paved the way for the later emergence of electronic instruments. An electromechanical instrument called the Teleharmonium (or Telharmonium) was developed by Thaddeus Cahill in the years 1898-1912.

Simple inconvenience hindered the adoption of the Teleharmonium: the instrument weighed seven tons and was the size of a boxcar. Several more refined versions were also constructed a few years later (the final and most refined model arriving in 1907, weighing in at 200 tons). The first electronic instrument is often viewed to be the Theremin, invented by Professor Leon Theremin circa 1919–1920. Another early electronic instrument was the Ondes Martenot, which was most famously used in the *Turangalîla-Symphonie* by Olivier Messiaen as well as other works by him. It was also used by other, primarily French, composers such as Andre Jolivet.

Post-war years: 1940s to 1950s

The tape recorder had been developed in Germany during the early 1930s. Whereas Wire recorders had been in use since 1898, the first practical tape recorder was called the Magnetophon (Angus 1984.) It wasn't long before composers used the tape recorder to develop a new technique for composition called *Musique concrète*. This technique involved editing together recorded fragments of natural and industrial sounds. Frequently, composers used sounds that were produced entirely by electronic devices not designed for a musical purpose.

The first pieces of *musique concrète* were written by Pierre Schaeffer, who later worked alongside such avant-garde classical composers as Pierre Henry, Pierre Boulez and Karlheinz Stockhausen. Stockhausen worked for many years at the WDR Cologne's Studio for Electronic Music, on two occasions combining electronically generated sounds with relatively conventional orchestras—in *Mixtur* (1964) and *Hymnen, dritte Region mit Orchester* (1967). Stockhausen stated that his listeners had told him his electronic music gave them an experience of "outer space," sensations of flying, or being in a "fantastic dream world" More recently, Stockhausen has turned to producing electronic music in his own studio in Kürten, his most recent work in the genre being *Cosmic Pulses* (2007). The first electronic music for magnetic tape composed in America was completed by Louis and Bebe Barron in 1950.

Two new electronic instruments made their debut in 1957. Unlike the earlier Theremin and Ondes Martenot, these instruments were hard to use, required extensive programming, and neither could be played in real time. The first of these electronic instruments was the computer when Max Mathews used a program called Music 1, later users were Edgard Varèse, and Iannis Xenakis. The other electronic instrument that appeared that year was the first electronic synthesizer.

Called the RCA Mark II Sound Synthesizer, it used vacuum tube oscillators and incorporated the first electronic music sequencer. It was designed by RCA and installed at the Columbia-Princeton Electronic Music Center where it remains to this day.

1960s to late 1970s

Because of the complexities of composing with a synthesizer or computer, let alone the lack of access, most composers continued exploring electronic sounds using *musique concrète* even into the 60s. But *musique concrète* was clumsy, and a few composers sought better technology for the task. That search led three independent teams to develop the world's first playable electronic synthesizers.

The first of these synthesizers to appear was the Buchla. Appearing in 1963, it was the product of an effort spearheaded by *musique concrète* composer Morton Subotnick. In 1962, working with a grant from the Rockefeller Foundation, Subotnick and business partner Ramon Sender hired electrical engineer Don Buchla to build a "black box" for composition. Subotnick describes their idea in the following terms:

Our idea was to build the black box that would be a palette for composers in their homes. It would be their studio. The idea was to design it so that it was like an analog computer. It was not a musical instrument but it was modular... It was a collection of modules of voltage-controlled envelope generators and it had sequencers in it right off the bat... It was a collection of modules that you would put together. There were no two systems the same until CBS bought it... Our goal was that it should be under \$400 for the entire instrument and we came very close. That's why the original instrument I fundraised for was under \$500.

Another playable synthesizer, the first to use a piano-styled keyboard, was the brainchild of Robert Moog. In 1964, he invited composer Herb Deutsch to visit his studio in Trumansburg. Moog had met Deutsch the year before, heard his music, and decided to follow the composer's suggestion and build electronic music modules. By the time Deutsch arrived for the visit, Moog had created prototypes of two voltage-controlled oscillators. Deutsch played with the devices for a few days; Moog found Deutsch's experiments so musically interesting that he subsequently built a voltage-controlled filter. Then, by a stroke of luck, Moog was invited that September to the Audio Engineering Society Convention in New York City, where he presented a paper called "Electronic Music Modules" and sold his first synthesizer modules to choreographer Alwin Nikolais.

By the end of the convention, Moog had entered the synthesizer business.

Also in 1964, Paul Ketoff, a sound engineer for RCA Italiana in Rome, approached William O. Smith, who headed the electronic music studio at the city's American Academy, with a proposal to build a small playable synthesizer for the academy's studio. Smith consulted with Otto Luening, John Eaton, and other composers who were in residence at the academy at the time. Smith accepted Ketoff's proposal, and Ketoff delivered his Synket (for Synthesizer Ketoff) synthesizer in early 1965.

Although electronic music began in the world of classical (or "art") composition, within a few years it had been adopted into popular culture with varying degrees of enthusiasm. One of the first electronic signature tunes for television was the theme music for *Doctor Who* in 1963. It was created at the BBC Radiophonic Workshop by Ron Grainer and Delia Derbyshire.

In the late 1960s, Wendy Carlos popularized early synthesizer music with two notable albums *Switched-On Bach* and *The Well-Tempered Synthesizer*, which took pieces of baroque classical music and reproduced them on Moog synthesizers. The Moog generated only a single note at a time, so that producing a multilayered piece, such as Carlos did, required many hours of studio time. The early machines were notoriously unstable, and went out of tune easily.

Still, some musicians, notably Keith Emerson of Emerson Lake and Palmer did take them on the road. The theremin, an exceedingly difficult instrument to play, was even used in some popular music. Many people believe it to be used in "Good Vibrations" by The Beach Boys, however the instrument used was actually an Electro-Theremin. There was also the Mellotron which appeared in the Beatles' "Strawberry Fields Forever", and the volume tone pedal was uniquely used as a backing instrument in "Yes It Is". Fifty Foot Hose used a custom-built guitar synthesizer, plus reverse sounds of drums, cymbals and electric bass, along with other magnetic tape transformations, on their 1967 album *Cauldron*.

As technology developed, and synthesizers became cheaper, more robust and portable, they were adopted by many rock bands. Examples of relatively early pioneers in this field are bands like The United States of America, The Silver Apples, Fifty Foot Hose, Pink Floyd and Genesis, and although not all of their music was electronic (with the exception of The Silver Apples), much of the resulting sound was dependent upon the synthesiser although it usually merely substituted for an organ. In the 1970s, the electronic style was revolutionised by the Düsseldorf band Kraftwerk, who used electronics and robotics to symbolise and sometimes gleefully celebrate the alienation of the modern technological world. To this day their music remains uncompromisingly electronic.

In Germany particularly electronic sounds were incorporated into popular music by bands such as Cluster, Neu!, Tangerine Dream, Can, Popol Vuh, DAF and others.

Some of the leading jazz pianists, most notably Herbie Hancock, Chick Corea, Joe Zawinul (Weather Report) and Jan Hammer (Mahavishnu Orchestra) started to use synthesizers on their fusion recordings during the years 1972-1974. The very first fusion albums containing synthesizer were recorded in 1972. These recordings, *I Sing the Body Electric* by Weather Report and *Crossings* by Herbie Hancock, used synthesizer for sound effects rather than a replacement for piano (and actually neither Hancock nor Zawinul played the synthesizer on those albums themselves). But in 1973 the synthesizer - used now as a solo instrument - was already part of the jazz fusion sound as heard in Weather Report's *Sweet nighter* album and Hancock's famous *Head Hunters*. Corea and Hammer soon followed, and both developed unique ways of playing synthesizers - utilizing slide, vibrato, ring modulators, distortion and wahwah. Later, Hancock released the well known *Future Shock* album, a collaboration with producer Bill Laswell in the 1980s, which spawned a pop hit "Rockit" in 1983.

Musicians such as Kraftwerk, Cluster, Tangerine Dream, Klaus Schulze, Brian Eno, Suicide, Vangelis, Mike Oldfield, Jean Michel Jarre, Ray Buttigieg, as well as the Japanese composers Isao Tomita and Kitaro, also popularised the sound of electronic music. The film industry also began to make extensive use of electronic music in soundtracks. An example is the Wendy Carlos' score for *A Clockwork Orange*.

The score for *Forbidden Planet*, by Louis and Bebe Barron, was entirely composed using custom built electronic circuits in 1956. On the album sleeve notes of the *Forbidden Planet* soundtrack, Louis and Bebe explain:

We design and construct electronic circuits which function electronically in a manner remarkably similar to the way that lower life-forms function psychologically. [. . .]. In scoring *Forbidden Planet* – as in all of our work – we created individual cybernetics circuits for particular themes and leit motifs, rather than using standard sound generators. Actually, each circuit has a characteristic activity pattern as well as a "voice". [. . .]. We were delighted to hear people tell us that the tonalities in *Forbidden Planet* remind them of what their dreams sound like.

Once electronic sounds became more common in popular recordings, other science

fiction films such as *Blade Runner* and the *Alien* series of movies began to depend heavily for mood and ambience upon the use of electronic music and electronically derived effects. Electronic groups were also hired to produce entire soundtracks, just like other popular music stars.

Late 1970s to late 1980s

In the late 1970s and early 1980s there was a great deal of innovation around the development of electronic music instruments. Analogue synthesizers largely gave way to digital synthesizers and samplers. Early samplers, like early synthesizers, were large and expensive pieces of gear. Companies like Fairlight and New England Digital sold instruments that cost upwards of \$100,000. In the mid 1980s, however, the introduction of low-cost digital samplers made the technology available to more musicians.

From the late 1970s onward, much popular music was developed on these digital machines. Groups and artists such as David Bowie, Ultravox, Gary Numan, The Human League, Landscape, Visage, Daniel Miller, Pete Shelley, Heaven 17, Eurythmics, Severed Heads, John Foxx, Thomas Dolby, Orchestral Manoeuvres in the Dark, Norman Iceberg, Yazoo, Erasure, Alphaville, Art of Noise, Yello, Depeche Mode and New Order developed new ways of making popular music by

electronic means.

According to a biography of the folk rock band Crosby, Stills & Nash, a number of early experimental electronic music works were recorded throughout the early 1970s out of a collaboration between David Crosby, Grateful Dead members Jerry Garcia, Phil Lesh, and Mickey Hart, and composer Ned Lagin. These included the Lagin album *Seastones*, first released in 1975. In 1980, UK recording artist Gary Numan helped to bring to electronic music into the wider marketplace of pop music with his hit "Cars" from the album *The Pleasure Principle*.

The new kinds of electronic noise that synthesizers could create contributed to the formation of the genre of industrial music, pioneered by groups such as Throbbing Gristle in 1975, Wavestar and Cabaret Voltaire. Artists like Nine Inch Nails in 1989, KMFDM, and Severed Heads, took the innovations of *musique concrète* and applied them to dance and rock music. Others, such as Test Department, Einstürzende Neubauten, took this new sound and created noisy electronic compositions. Other groups, such as Robert Rich, Zoviet France, and Rappun created soundscapes using synthesized noise. Still others (Front 242, Skinny Puppy) combined this harshness with pop and dance, creating electronic body music.

During this time, dub musicians such as industrial-funk outfit Tackhead, vocalist Mark Stewart and others on Adrian Sherwood's On-U Sound record label in the 1980s integrated the aesthetics of industrial and noise music with tape and dub production. This paved the way for much of the 1990s interest in dub, first through bands such as Meat Beat Manifesto and later downtempo and trip hop producers such as Kruder & Dorfmeister. Still, others, like Big Noise, Bruce Haack, Robert Lowe, Glenn Davis (DR G) and Sprites built, or had built some or all of the instruments that they used.

Recent developments: 1980s to early 2000s

The development of the techno sound in Detroit, Michigan and house music in Chicago, Illinois in the 1980s, and the later UK-based acid house movement of the late 1980s and early 1990s fueled the development and acceptance of electronic music into the mainstream and introduced electronic dance music to nightclubs.

Electronic composition can create faster and more precise rhythms than is possible using traditional percussion, as is used in Trance music. The sound of electronic dance music often features electronically altered (samples) of traditional instruments and vocals.

Circuit Bending

Circuit bending is the creative short-circuiting of low voltage, battery-powered electronic audio devices such as guitar effects, children's toys and small synthesizers to create new musical instruments and sound generators. Emphasizing spontaneity and randomness, the techniques of circuit bending have been commonly associated with noise music, though many more conventional contemporary musicians and musical groups have been known to experiment with "bent" instruments.

Overview

Genres

Electronic music, especially in the late 1990s fractured into many genres, styles and sub-styles, too many to list here, and most of which are included in the main list. Although there are no hard and fast boundaries, broadly speaking we can identify the experimental and classical styles: electronic art music, *musique concrète*, acousmatic art; the industrial music and synth pop styles of the 1980s; styles that are primarily intended for dance such as italo disco, techno, house, trance, electro, breakbeat, jungle, drum and bass, Gabber, and styles that are intended more as experimental styles or for home listening such as electronica, IDM, glitch, Breakcore and trip-hop. The proliferation of personal computers and

the MIDI interface beginning in the 1980s brought about a new genre of electronic music, known loosely as chip music or bitpop. These styles, produced initially using specialized sound chips in PCs such as the Commodore 64, Commodore Amiga, and Atari ST among others, grew primarily out of the demoscene. The latter categories such as IDM, glitch and chip music share much in common with the art and *musique concrete* styles which predate it by several decades.

Notable record labels

Until 1978 and the formation of Mute Records, there were virtually no record labels that deal with exclusively electronic music. Because of this dearth of outlets, many of the early techno pioneers started their own. For example, Juan Atkins started Metroplex Records a Detroit-based label, and Richie Hawtin and John Acquaviva started their hugely influential Plus 8 imprint. In the United Kingdom, Warp Records emerged in the 1990s as one of the pre-eminent sources of home-listening and experimental music. Later arrivals include Astralwerks, Ninja Tune, Tiësto's Black Hole Recordings, Oakenfold's Perfecto Record label and John Digweed's Bedrock Records.

Source:

http://www.juliantrubin.com/encyclopedia/electronics/electronic_music.html