

Development of The Recording Process and The Recording Industry

The Sound Recording Process - An Overview

The **1950s** had been a simpler music. And the recording process also reflected this. In the 1940s, although they used multiple microphones to capture the sound, the process was very much a live one with the mix going direct to disc, which was then used as a master to create multiple copies.

The 1950's saw the advent of a German invention, the magnetic tape. But these machines were mono(meaning even if you had two speakers the same sound came out of both, no advantage was taken of stereo imaging to create a psychological effect of different instruments positioned across a room by varying the balance in each speaker). So any record player therefore only needed one speaker to reproduce the sound. As time went on, the quality of the microphones improved, thus allowing the source to be recorded more accurately.

What had been missing was the ability to record every instrument separately and mix them later.

The 1950s saw the development of 2, 3 & 4 track recording. This still meant some instruments had to be mixed together live. Obviously, the decision was how to use the tracks. For a rock'n'roll bands it could be one track for drums, bass and guitars, a second track for lead vocals, third track for backing vocals and maybe a fourth for piano (if used).

The 1960s saw the introduction of 8 and 16 track recording while the 1970s saw 32 track recording, but all of this was tape based. Not until the digital era would the number of tracks become limitless with the recording medium becoming the hard disc drive and then solid-state drive.



The two machines pictured above Rangertone(left) and Revox(right) are both using 1/4" tape. The Rangertone recording only ONE track and the Revox recording TWO tracks.

The process of using tape is all part of the **analogue** era. Considered sonically better than digital, but not as versatile.

Below are tape machines from 70s: 16 track and 24 track respectively.



Manufacturers included Revox, Ampex, Studer, Otari

Hyperlinks

<http://museumofmagneticsoundrecording.org/ManufacturersMultiTrack.html>

https://en.wikipedia.org/wiki/History_of_multitrack_recording

Medium

The tape recorder was invented in the 1930s in Germany at BASF.

The only end medium, however, for the consumer was the record until the 60s.



12" Record



7" Record

A record player was needed to play the record - a platter that spins at 33, 45 or 78 rpm, an arm with a cartridge and a diamond tipped needle which was placed on the spinning record to playback the sound.



Turntables are still available today, and some with USB outputs, for connection to your computer.

The record is also having a resurgence in popularity, but are the most expensive they have ever been. A CD may vary between \$7.99 and \$19.99 on average but a 12" album (record) is closer to \$50. Albums in the 60s and early 70's were more likely to cost you around \$5.95

Good record players are available from Audio-Technica, Rega, Technics, Pro-Ject, Thorens, Marantz, Denon.

The consumer version of tape didn't appear until the 60's, the cassette, which then required a cassette player.



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More on the Use of Tape in the Recording Process

If editing was done, it was done by literally cutting up the tape and taping back together the bits you wanted.

Les Paul was significant in a number of areas. He developed the first 8-track recorder in the 1950s, approached Gibson musical instrument manufacturer with the idea of a solid body electric guitar, invented tape delay and close miking techniques.

The creation of effects for sound was very basic. To get certain sounds engineers had to be very creative. Most of it relied on the recording environment. No clever little electronic box to do it all for you, it was real.

These days reverb is created in an electronic box, back then you needed a specially designed room. Reverb is a series of infinite and very fast echoes that combine together to enhance, say the voice. The bathroom is the classic example, where your voice sounds better than in any other room when you sing. The difference also between singing in an empty room or in a room with carpet, curtains and furniture. This was followed by the invention of plate reverb, where a suspended metal plate was used to create the reverb effect.

More Developments in the 1950s

■ Reverb chamber



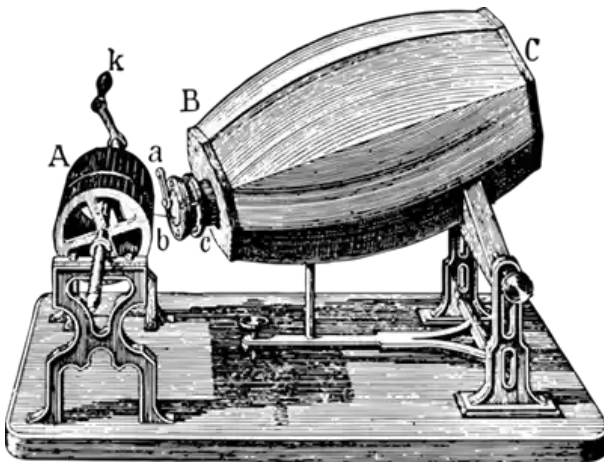
More Developments in the 1950s

■ Reverb plate



Earliest Record related Inventions

- 1 **Edouard-Leon Scott de Martinville (France)** patented the "phonograph (1857). It only recorded sound but could not play it back and was used for scientific research



BC: barrel with an opening at C

c: a brass tube with membrane and style (same concept as a needle on a record player) at "b" and movable piece "a" by which the position of the modal points can be regulated

k: handle to turn the cylinder "A" covered with lampblack paper. this was the recording medium

- 2 **Charles Cros (France)** - the "paleophone". He almost invented the first phonograph. He was the person to the process in theory but before he could construct a working model Thomas Edison (USA) produced one.
- 3 **1878 Thomas Edison** patented phonograph technology. His first recording was made on tin foil around a cylinder and could be played back. Although the quality was not the best but it worked and amazed everyone.
- 4 **Alexander Graham Bell, Chichester Bell and Charles Tainter (Scotland)** developed a version of the phonograph in the 1880's which used wax covered cylinders used to record sound.



Edison wax cylinder phonograph



Brown wax cylinders

The earliest surviving recording on cylinder is Sir Arthur Sullivan's "The Lost Chord"

- 5 **1887 Emile Berliner(born in Germany but moved in USA)** - patented the flat disc record gramophone. The disc was made of a hard rubber and was initially 5". Later this became 7". He worked with manufacturer Kammer & Reinhardt to produce a machine to play his disc - this was a hand driven device. The discs rotated at about 75rpm



1890 Kammer & Reinhardt device

Although the first recording on gramophone is said to be "Twinkle Twinkle Little Star", it has since turned out to be a recording by Emile Berliner reciting Friedrich Schiller's ballad "Der Handschuh"

- 6 1895 shellac (a resin secreted by the lac bug and scraped from trees in India and Thailand) replaced rubber as the medium for the gramophone disc. This would remain the case until vinyl records in the 1950's
- 7 Wax cylinder recordings still remained as competition to the gramophone and lasted in music application until about 1915. It was however still used by Dictaphone until 1947 for message recording and dictation taking in office application.
- 8 Berliner formed Deutsche Grammophon, which became the longest lasting record company in history until its acquisition by Universal Music in 1999. In 1901 Eldridge Johnson (who had Berliners patents) formed the Victor Talking Machine Company. In 1929 RCA bought out Victor, hence RCA-Victor. RCA lasted until 1986 when it was taken over by German company BMG. In 2004 BMG merged with Sony to become Sony-BMG. In 2008 this arrangement dissolved and Sony acquired RCA.
- 9 Early 1890's "phonograph parlours" came into existence where people could go and listen to the cylinder recordings.
- 10 1894 Columbia introduced the \$40 phonograph machine.
- 11 1912 Columbia stopped making cylinders and only produced discs.
- 12 1948 the first LP (long play) released by CBS - Mendelssohn Violin Concerto in E minor by played Nathan Milstein with Bruno Walter conducting the New York Philharmonic Orchestra. The LP could play 21 minutes per side and was 12" in diameter. A vinyl album had been originally manufactured by RCA-Victor in 1931 but was a failure because of unreliable playback equipment and affordability. But now after much research these problems were solved by Dr Peter Goldmark at CBS.
- 13 1957 first commercially available stereo recordings released (although invented in 1931 by Alan Blumlein from EMI)
- 14 1982 first commercial CD (compact disc) produced by Phillips (A recording of Mozart waltzes by Claudio Arrau). The first popular CD produced at the new factory was The Visitors by ABBA.

Records spun at 78rpm initially but then became 33 1/3 rpm (for albums) and 45 rpm (for singles and EP - Extended Play)

TIMELINE FOR RECORD LABELS AND MILESTONES

- 1 Columbia Phonographic Company (1887) USA; then Columbia Broadcasting System [CBS] (1927)
- 2 Victor (1901 USA - Victor Talking Machine Company)
- 3 Edison (founded 1888 USA)
- 4 Deutsche Grammophon (founded 1898)
- 5 Odeon (founded 1903 Germany)
- 6 Parlophone (German British label founded in Germany in 1896 - British version founded in 1923)
- 7 OKed (1915) - first US blues label
- 8 Emerson (1916)
- 9 Brunswick (1916)
- 10 United Artists (1919)
- 11 Black Swan (1921) - blues & jazz
- 12 RCA [Radio Corporation of America] (1919) *RCA purchased Victor and became RCA-Victor*

In the 1920s - the industry standard became the 78rpm shellac record by 1925;

13 *Decca (1929) UK*

In the 1930s Warner Brothers bought Brunswick

14 Electrical and Musical Industries [EMI] UK (1931)

Abbey Road recording studios opened 1931

1935 - the Swing Era begins with Benny Goodman - live bands (almost orchestras)

15 Blue Note Records (1939)

1940s, more big bands appear Glenn Miller

AMPEX introduced reel-to-reel tape recorders

16 Capitol Records (1942)

17 Mercury (1947)

18 Atlantic (1947) by Ahmet Ertigun

19 Aristocrat (1947) . . changed name to CHESS in 1950Leonard and Phil Chess

20 Other labels: Apollo, Excelsior, Jukebox (later Specialty), Modern, Imperial, King

21 Fantasy (1949)

22 Elektra (1950)

1948 Columbia introduce 33 and 1/3 rpm vinyl record and RCA introduce 45rpm vinyl microgroove record

1952 American Bandstand airs for first time - host Dick Clark

23 Sun Records (1952) ... Sam Phillips signed Elvis Presley 1953

24 Epic Records launched by CBS in 1953

25 ABC records (1955) launched by Paramount Pictures.

26 Warner Brothers Records (1958) launched by Warner Pictures

27 Island Records (1959) . . . Chris Blackwell in Jamaica

28 Berry Gordy formed Motown Records (1959 initially as Tamla)

29 Phonogram (1962)merger between Phillips and Siemens

30 Stax . . 1961 in Memphis

31 MCA (1962)

Australia: Festival Records(1952); Mushroom Records (1972)

During 1980's the big six record companies were Warner Music, EMI, CBS (later Sony), BMG, Universal and Polygram

Origins and progression

- * Music Publishers Holding Company → WEA → Warner Music Group
- * EMI (Electric and Musical Industries) → Universal Music Group acquires EMI
- * ARC (American Record Corporation) → Columbia → CBS (Columbia Broadcasting System) → Sony
→ Sony-BMG → Sony
- * RCA → Bertelsmann Music Group (BMG) [but now the RCA label is owned by Sony Music]
- * new BMG founded in 2008 following dissolution of Sony-BMG partnership
- * Decca → MCA → Universal Music Group
- * HDD (Hollandsche Decca Distributie) → PPI (PHILLIPS Phonografische Industrie) → GPG (Grammophon
Phillips Group) → Polygram → Universal Music Group

Other Well Known Labels distributed by Major Companies

A&M	Albert	Apple	Asylum	Arista			
ABC			Atco				
			Atlantic				
Black and White							
Capitol	Chess	Columbia	Decca	DJM	Deram	Dunhill	
Epic							
Fantasy	Fontana	Geffen	Interscope	Island			
Mercury	MCA	MGM	Mushroom	Motown	Parlophone	Polydor	Rocket
Silvertone	Sire	Stax	Stiff	Tamla	Tempo		
Vee Jay (Chicago)	Virgin	Victor					

History of the Multitrack Recording Process

Multitrack technology was first developed in the late 1940s after the introduction of magnetic tape as a means of recording.

This new medium allowed for separate recordings to be made on different parts of the tape's surface, which in turn could be played back at the same time.

Multitracking was developed by the US company Ampex and through the experiments of the guitarist Les Paul.

By 1954 Ampex had produced the first eight-track tape machine at Paul's request, but eight-track machines remained rare within the industry until the late 1960s.

An early innovator in multitrack recording was Atlantic Records' chief engineer Tom Dowd. Dowd acquired an eight-track prototype in the late 1950s and used the new technology to split the rhythm section into separate tracks.

During the 1970s the recording industry took these technologies to their logical conclusion and began using 16-, 24-, 32- and 48-track studios.

1943 - stereo recording - AEG in Germany.

Two track recording adopted in the early 1950s

But it was [Patti Page](#) who was the first vocalist to record her own voice, sound on sound, with a song called '[Confess](#)', in **1947**.

Bill Putnam, an engineer for Mercury Records, was able to overdub Page's voice, due to his well-known use of technology.

Mercury was not a large label at the time, and although tape recording had been adopted in Los Angeles earlier in 1947, studios in Chicago were not yet equipped with MONO tape technology, never mind multitrack.

This session involved recording the orchestra and her 4th background vocal onto one lacquer in one pass, playing back the lacquer for her to sing over the top of that with the 3rd background vocal and so on with the main vocal being the last pass ^[4] utilizing the same technique Les Paul had been experimenting with since the early '30s.

1957 - First Ampex 8-Track installed in Les Paul's studio (\$10000 - probably the equivalent to \$100,000 now)

1957 - the second Ampex 8-track was sold to Atlantic Records at Tom Dowd's insistence.

Although the 8-track had been invented, most studios only took up 3-track recording. Recording band on 3-tracks, then mixing down to one track. A second 3-track was usually employed.

The 4-track became the standard in studios until the mid-60s.

Early Beatles and Rolling Stones records were done on 4-track.

1964 - Abbey Road Studios had 2 x 4 track Telefunken multitrack recorders. Earliest Beatle recordings were done on 2-track but not until 1964 did they record on 4-track.

George Martin was the EMI house producer

The art was to control the noise which came from continually bouncing tracks backwards and forwards to different tracks and different machines. Abbey Road engineers became very adept at this.

1966 - The Beach Boys "Pet Sounds" was recorded initially on 4-Track. But Brian Wilson's processing was quite elaborate. Later Brian employed an 8-track to finish the project.

1966 3M introduced an 8-track version of their multitrack recorder.

1967 Ampex introduced their MM1000 1" 8 track machine.

Sgt Peppers recorded on two 4-track machines.

1967 Ampex built first prototype of a 16 track machine. Installed in Mirasound Studios, New York City.

1967 Lovin Spoonful record their album "Everything Playing" on 16 track.

1968 First 8-track in the UK installed in Trident Studios, the Ampex MM1000

1968 Ampex 16 track commercially available.

1968 CBS Records install a 16 track in the New York City Studios and used it record Blood, Sweat & Tears second album.

1968 TTG Studios in Los Angeles built their own 16 track machine. This was used to record Frank Zappa's "Hot Rats" and Jefferson Airplanes "Volunteers" - both released in 1969.

Scully Recording Instruments (USA) started manufacturing multitrack recording machines.

Abbey Road Studios acquired 3M 8-track machines. Both Pete Townshend (The Who) and John Lennon (The Beatles) both had one in their home studio around 1969

The Beatles used 8-track machines on The White Album and Abbey Road.

1969 Ampex released their 2" 24-track tape machine.

1971 Australia's first 16 track recorder installed in Armstrong Studios, Melbourne.

1974 Australia's first 24 track recorder installed Festival Records Studio, Sydney.

1978 MCI built a prototype of 3" multitrack machine but it never went into production.



Otari built 32 track, 2" machine MX-80. Pacific Gold Studios, Port Moresby, New Guinea installed on in the 80s

Analog tape machines continued until the 1990's when they were replaced by digital tape machines and then eventually by computer systems with hard drives.

Postscript

In Australia the music industry seemingly went into decline with the death of live music. Venues where residents complained to local councils about noise and crowds late at night. Publicans decided it was easier to install poker machines than deal with complaints.

Also, computer generated music took hold and the DJ became very dominant. No need for a band, all instruments generated via sampling on the computer. Then they co-opted a guest vocalist. Leading DJs - David Guetta, Avici etc.

Also the advent of the internet and availability of music online both legally (streaming via such sites as Spotify or Youtube) and illegally via **Napster** - later subject to legal action from the band Metallica and many more - shutting down in 2001.

The CD is no longer the endgame and is more a promotional tool. The significant incomes come from live performance and merchandising.

Whereas record companies used to recoup monies invested in artists solely from record / CD sales, now it recoups from ALL forms of income.

Further there is little point in artists chasing record companies for contracts. The artist must now build their own profile via the internet and social media and when their following reaches a certain level, the companies start chasing the artist.

As of June 2024 NSW Government is introducing Government Grants for venues to install sound proofing.

In New South Wales, as of 2026, YouthRock continues which encourages young musicians to write original songs, record their songs, perform them live and learn about the music industry.